APRIL 5, 1958
VOL. 154 — NO. 14

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

DITCH DIGGER

Small ditching machines are attacting increased interest in the telephone industry for use in urban underground installations. Here employes of Cincinnati & Suburban Bell Telephone Co. are using ditcher to dig trench for cable conduit laying job.

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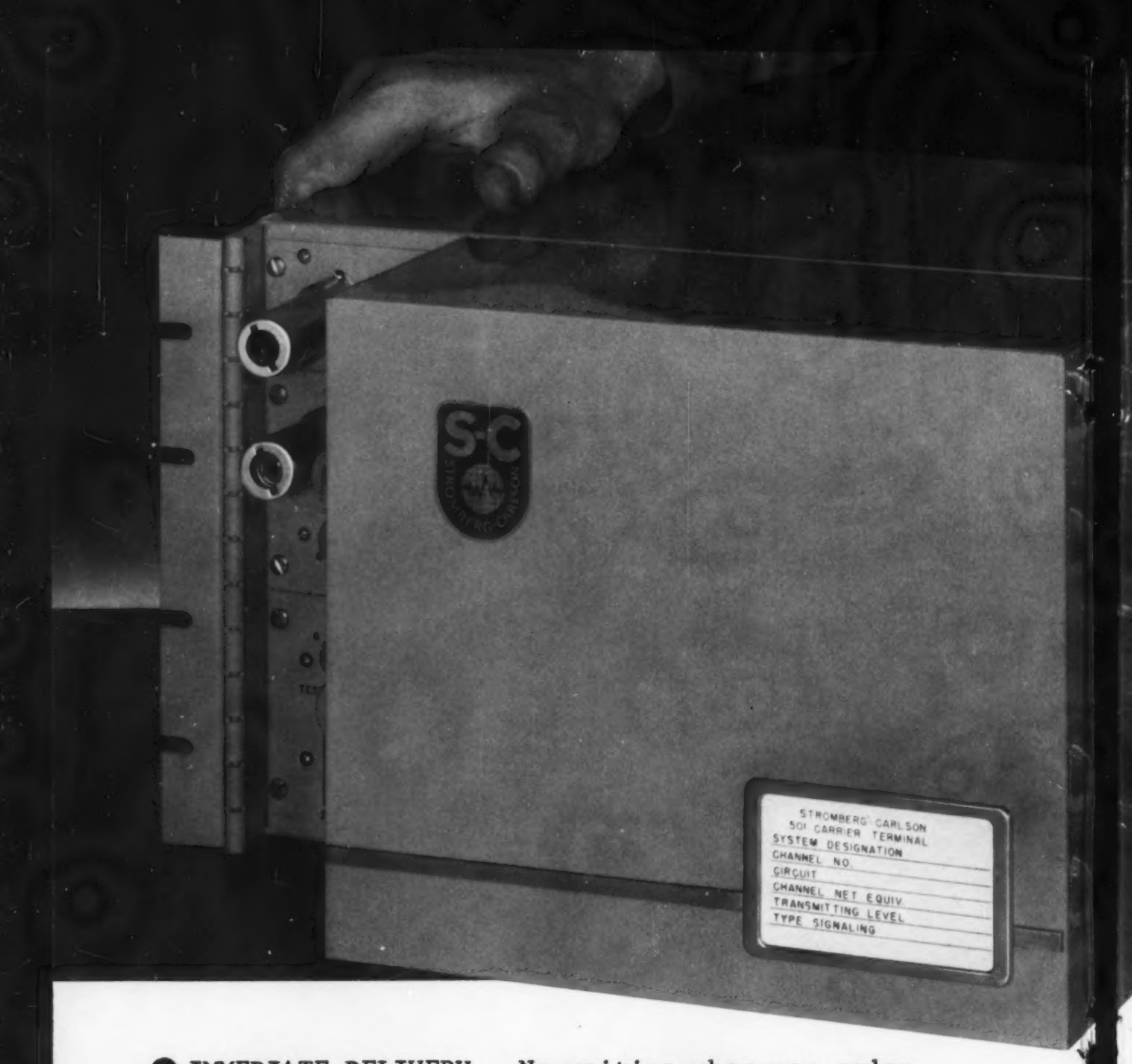

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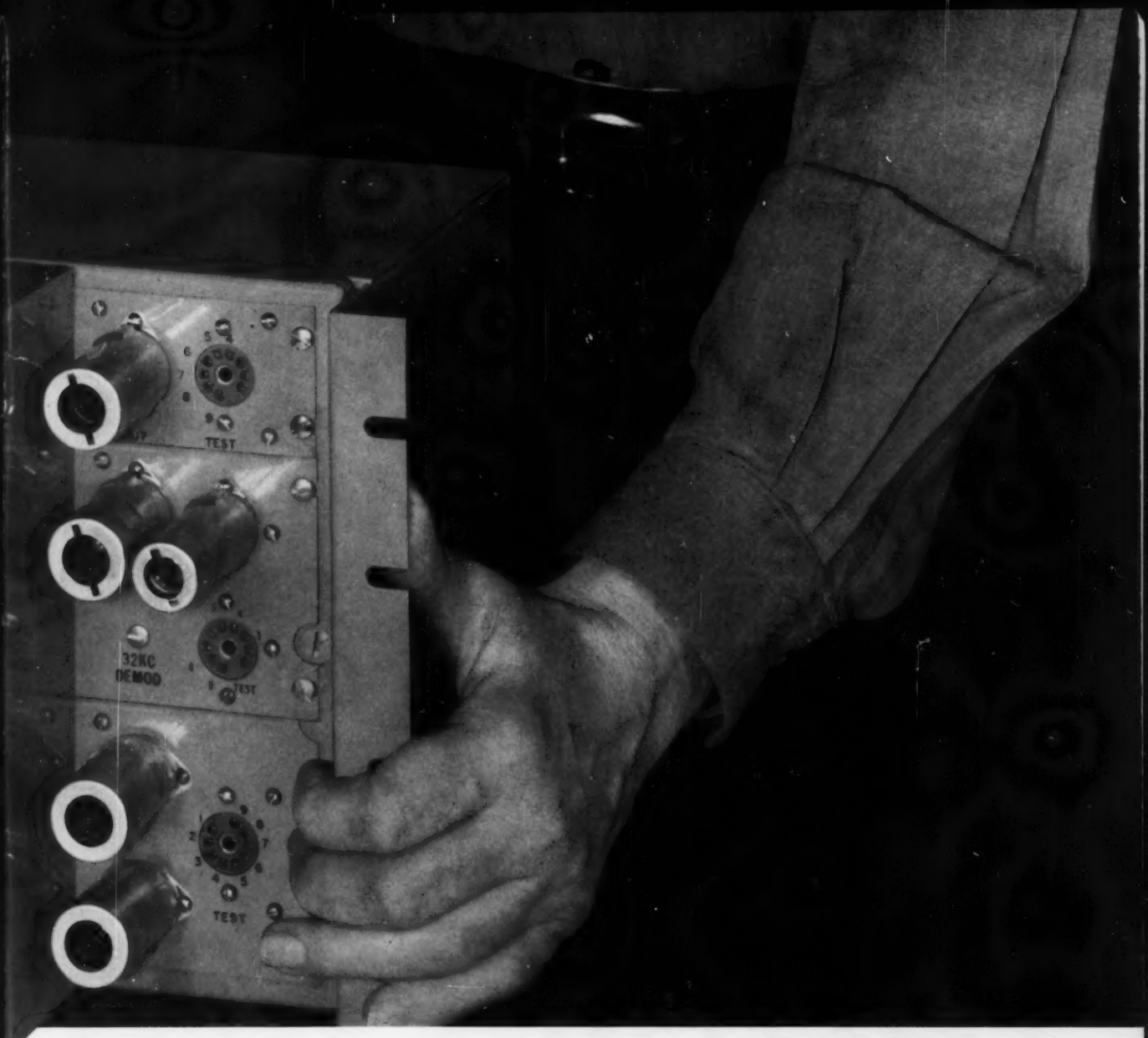

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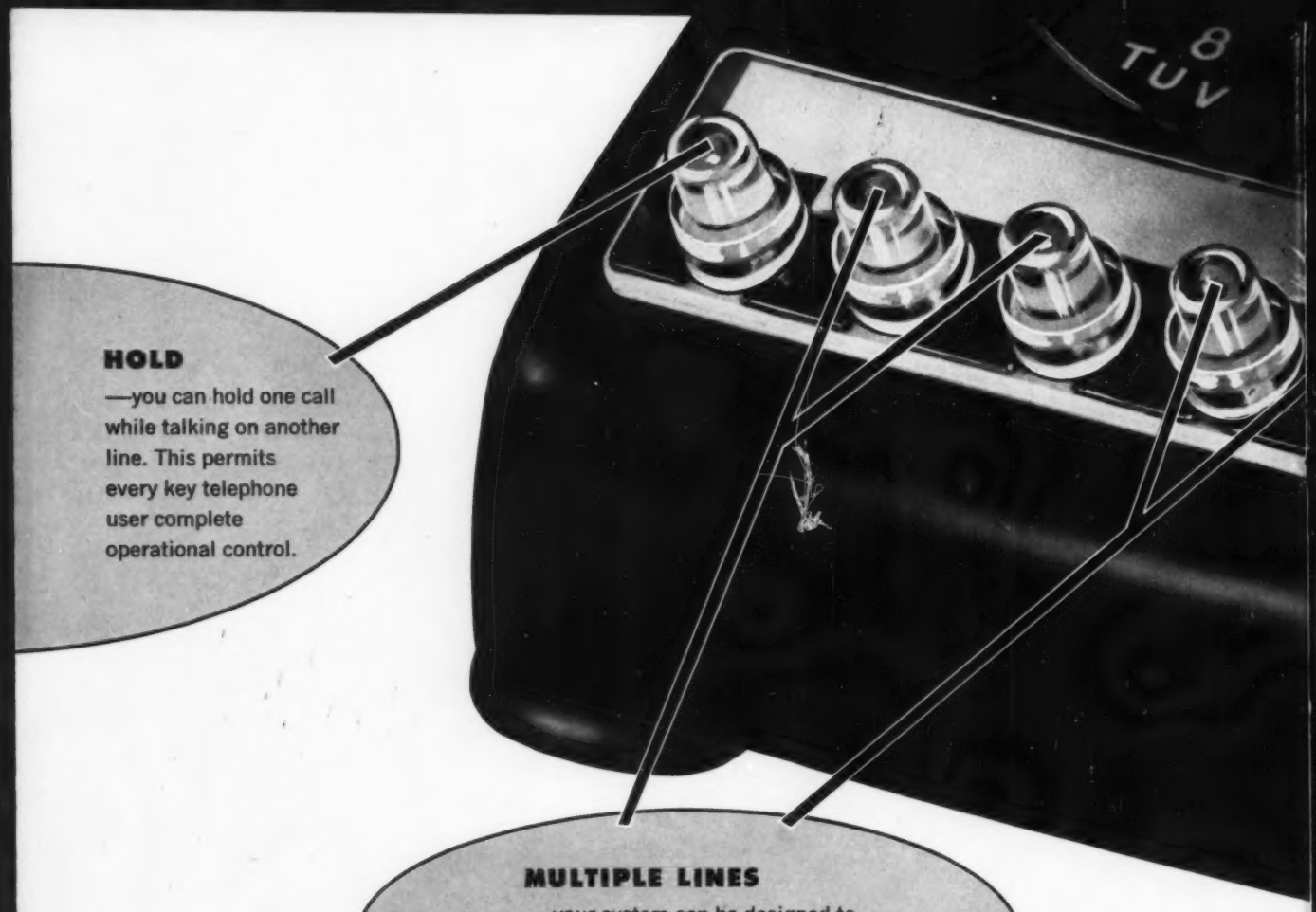
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FLASHES AND PLUGS

OVER AND OUT. "Good morning, Chief," said a London newsman telephoning a visiting African chieftain. "Did you have a comfortable flight?"

The chief made a series of raucous noises—honk, oink, screech, whistle, z-z-z, then added in perfect English, "Yes, very pleasant indeed."

"And how long do you plan to stay?" asked the reporter.

Prefacing his answer with the same noises, the chief answered, "About three weeks."

"Tell me, Chief," inquired the baffled reporter, "where did you learn to speak such flawless English?"

After the now standard honks and screeches, the chief answered, "Short-wave radio."

•

HONORARY ELECTION? A printing error in the Nuernberg, Germany telephone book has turned a U. S. army captain into the city mayor.

But Frederick Brouilette of Palmer, Mass., is far from happy about it. Here's why:

His telephone keeps ringing and German voices ask politely: "Am I speaking to the oberbuergermeister (lord mayor)?"

At first Capt. Brouilette thought it was funny, but after dozens of telephone calls he became angry. He investigated and discovered that the Nuernberg telephone book, in listing the home telephone number of Mayor Andreas Urschlechter, had listed Capt. Brouilette's instead.

He appealed to a local newspaper which printed a sympathetic story and gave all the good burghers of Nuernberg the oberbuergermeister's correct number.

•

CAN'T DO BOTH. An unidentified housewife had questions to the point when lightning set off Jacksonville, Fla.'s air raid siren two hours after a tornado alert had been called off.

She telephoned police and asked, "Is it a tornado or an air raid? Should I duck or run?"

•

WAILS IN WALES. Over in the British Isles in Monmouth, Wales, a coal truck backed up to a hole in the sidewalk outside a building and dumped most of a ton of coke down it.

Telephone workers then began shoveling the coke out of their telephone maintenance manhole, the International News Service very matter-of-factly reported recently.

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

April 5, 1958

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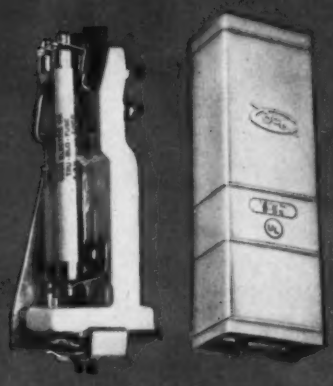

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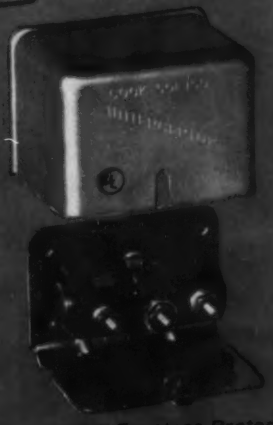

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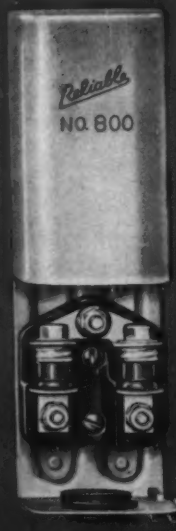

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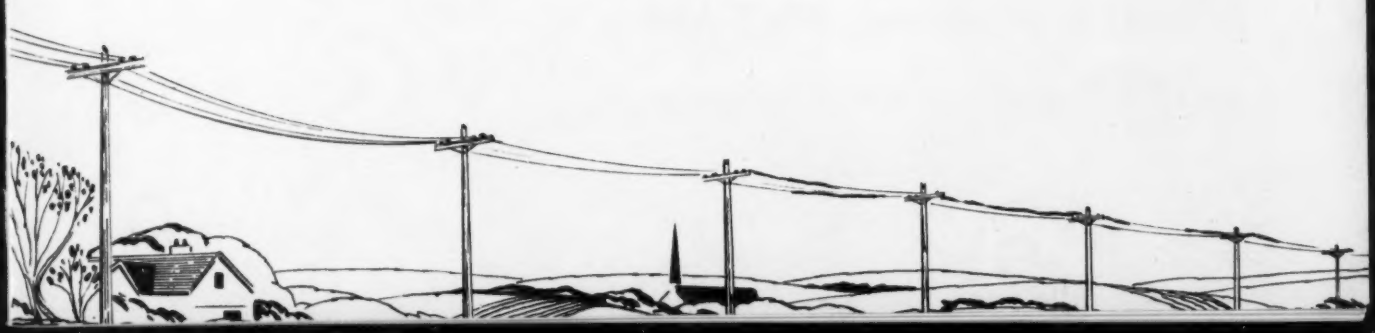

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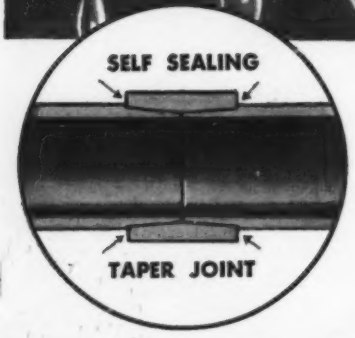

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

Congressional committee begins hearings on enforcement of AT&T consent decree. Bell attorneys answer GSA request for lower private line rates for federal government. Senate beats down effort to reduce reimbursement to utilities for relocation of facilities along federal-aid highways.

THE HOUSE judiciary sub-committee investigation of the consent decree ending the federal government's anti-trust suit against the Bell System turned up some interesting, but not very surprising, information last week. Beginning on Mar. 25, this subcommittee, headed by Representative Celler (D., N. Y.), opened hearings with the statement that there would be no investigation of the American Telephone & Telegraph Co., as such. Chairman Celler said his group's inquiry would deal mainly with the enforcement by the Justice Department of the 1956 consent decree (filed in the U. S. District Court in New Jersey) whereby the government ended its long pending anti-trust suit to divorce Western Electric from the Bell System.

Under terms of this consent decree Western Electric agreed to confine its manufacturing and servicing operations to regulated telephone utility services. It also agreed to open up Bell System patents for licensing. Western Electric was required to divest itself of two subsidiaries and to halt the manufacture of train dispatching equipment.

But readers of this department will recall that the consent decree was quite different from the objectives of the 1949 suit originally filed by the Justice Department, which asked for an absolute divorce between Western Electric and American Telephone & Telegraph Co. The suit also charged the Bell System with a concerted effort to monopolize the manufacture and distribution of telephone and other equipment. The consent decree did not, of course, require the Bell System to divest itself of control of its manufacturing arm, Western Electric.

This gave rise to some criticism in the House, notably by Representative Roosevelt (D., Cal.), that the government had been too lenient in agreeing to the consent decree and too lenient in enforcing its provisions.

The Justice Department has taken the position that it could not have obtained court approval of a compulsory divorce of Western Electric from the Bell System. And the Bell System has taken the position that the consent decree was far from lenient. On the contrary, Horace P. Moulton, general counsel for AT&T, said that the loss in royalty revenues alone as a result of the consent decree would be from 3 to 5 million dollars a year during the next 10 years for the Bell System. Moulton said that the decree placed the Bell System "under restrictions such as have been imposed upon no other American enterprise." Even so, Moulton said, the consent decree was much better than the meat ax approach sought in the original Justice Department suit, whereby Western Electric would have been cut off from the rest of the Bell System. That, said Moulton, would have destroyed the Bell System organization "and would in our judgment have done most serious damage to the public interest."

Making the inevitable comparison between the Celler sub-committee of the House Judiciary Committee and the House Sub-committee on Legislative Oversight (which has been putting the FCC through the wringer), it must be confessed that the judiciary group has been relatively mild in its approach. Celler actually commended the AT&T for cooperation with the sub-committee. But, he felt that the Justice Department was not so cooperative.

In fact, Celler still seems to be put out because the Justice Department, as far back as 1956, refused to turn over all its files on the consent decree negotiations to the House judiciary subcommittee. But this argument goes to a fundamental difference of opinion between the present Congress and the Eisenhower administration which has been going on for a long time. The background is chiefly political, and for that matter, not too significant. The congressional Democratic leadership feels it is entitled to all kinds of information from the files of administrative departments where they are being investigated. The administration takes the position (as the Truman and Roosevelt administrations did before it) that Congress has no right to confidential information, working papers, or other materials used or developed by the administrative branch in the conduct of government affairs—without, of course, the consent of the President.

The same argument was going on 10 years ago when there was a Republican Congress and a Democratic President. The only difference is that the parties have switched sides. So, it all boils down to who is doing the investigating and who is being investigated.

One definite suggestion made by Representative Celler, which grew out of his impatience with the Justice Department, was his comment about a possible legislative recommendation. He said that his sub-committee might have to recommend a new law which would require the Justice Department to give full notice to all affected parties before

filing a consent decree terminating anti-trust proceedings. The fact that a consent decree does put an end to suits by the federal government of this character, and that there usually is no practical way in which they can be opened up again or appealed, makes it necessary, in Celler's opinion, that great care must be taken before such agreements are concluded and filed in the form of a court judgment.

It so happens that a decision by a federal district court in Washington, D. C., on the very day before Celler made that statement provided a sort of anti-climax. This district court decision grew out of a case involving a government suit against major oil companies alleging violation of some provisions of a consent decree, limiting dividends to be paid by shipper-owners to pipeline subsidiaries. This was the only other consent decree which the Celler sub-committee has investigated. Following criticism that the oil companies had wrongfully interpreted the dividend restriction, the Justice Department sued for alleged violation of the consent decree. This suit was dismissed by the federal district court. Representative Celler urged the Justice Department to appeal.

Other Bell Testimony

On the second day of the Celler subcommittee hearings, two other witnesses appeared for the Bell System. The first was T. Brooke Price, former AT&T general counsel, who testified that the idea for the consent decree originated not with his company but with the Justice Department itself. He recalled that in June, 1953, he happened to be attending a judicial conference at White Sulphur Springs, W. Va., where he met the attorney general at that time, Herbert Brownell.

Brownell was worried about disposing of some old anti-trust suits which the Justice Department was having trouble cleaning up. Anti-trust suits have a notorious record for going on and on for years. Witnesses, and even lawyers, grow old along with these cases, their memories fail, and occasionally they die off. When the cases finally come to trial—if they do come to trial—the government finds itself handicapped trying to make a case with such stale evidence.

Anyhow, when Price was questioned concerning his part in negotiations leading to the consent decree, Price quoted Brownell as saying that if a satisfactory settlement could be worked out, he (Brownell) did not anticipate any trouble about getting President Eisenhower's approval. Prior to that time, Price said, the Bell System had been unable to interest the Justice Department in even postponing trial.

About the only excitement in this hearing was a flurry of argument between Democrat and Republican members of the sub-committee. Representative Keating (R., N. Y.) accused Celler of trying "to create a sinister atmosphere" in an effort to "pin something on the Justice Department." Celler denied this and said that he resented Keating's charge. Then Representative Miller (R., N. Y.) wanted to know why Celler had blocked all effort of the Republican members to get advance copies of the questions which the sub-committee counsel planned to ask. Celler refused to explain other than to say "certain things happened to cause me to make that order." But from what developed from either questions or answers, he might as well have saved himself the trouble.

The other Bell System witness was Dr. M. J. Kelly, president of Bell Telephone Laboratories, Inc. He testified he had several discussions with former Defense Secretary Wilson and other Defense Department officials about the anti-trust case in 1953. Kelly said that Western Electric officials felt that trial of the anti-trust suit at that time would interfere with important defense work which Bell System was doing.

The sub-committee's counsel seemed to be striving to make a point concerning a letter written by former Secretary of Defense Wilson in 1953 to the attorney general. In this letter Wilson agreed that trial of the anti-trust suit at that time would threaten the continuation of the important work the Bell System was then carrying on in the interest of national defense. The letter also declared that the severance of Western Electric from the AT&T would be "contrary to the vital interests of the nation."

It was brought out that Wilson's letter followed very closely the language previously expressed by Mr. Kelly in a memorandum submitted to Wilson. But, it was also brought out that it had long been the position of the Department of Defense that anti-trust litigation against the Bell System might interfere with defense work being done by the system. During the Truman administration, Robert A. Lovett, Truman's Secretary of Defense wrote three different attorney generals seeking postponement of the AT&T anti-trust case. These letters were apparently unsuccessful.

U. S. Rate Case Activity

Mention has already been made in this department (TELEPHONY, Mar. 15, page 17) concerning the activity of the Government Services Administration (GSA) in seeking a reduction of rates for private line telephone rate services furnished by the Bell System and Western Union. Several interesting developments have since occurred in this area. The original petition filed by GSA Administrator Franklin Floete was for an immediate 25 per cent slash, because the earnings of the Bell System from its inter-exchange channel business for such services were in excess of all Bell System private line earnings. Specifically, Floete pointed out that while the general average of Bell System private line services under investigation were earning 6.4 per cent, the earnings from the inter-exchange channel business were 12.5 per cent.

The error of this assumption was pointed out in a reply filed for the Bell System by its attorneys, John T. Quisenberry and Ernest D. North. This answer pointed out that, first of all, there is no requirement, in law or in fact, that the rate of earnings for every part of a utility service should be exactly the same as that for the service as a whole. In fact, that would be impossible. As a practical matter, it would be something like arriving at a general average, then measuring every factor averaged by the result.

Another Bell System argument flowing from the same GSA error was the failure of GSA to make any allowance for the result of the proposed reduction. If you reduce one rate 25 per cent to bring it in line with earnings from another rate, you have lowered the general average of all (general average) rate revenue. That gives you another general average for measuring the rate you tried to put "in line." That starts the process all over again and it keeps going until earnings from *all* services are reduced to the level of the earnings from the most *unprofitable service*. The obvious end of that road is bankruptcy.

On another front, however, there was some indirect result of GSA activity in rate cases generally. The House Appropriations Committee, in reporting out the independent offices appropriation for the coming fiscal year (beginning July 1) made a 10 per cent reduction in the budget allowed for GSA's transportation and public utilities service. This is the GSA department which has become so active in rate case activity all over the country. The House committee did not, however, impose any limitation on GSA's intervention in rate cases. In fact, the report of the House committee took the view that the GSA rate case activity was properly part of that bureau's function as the housekeeper for federal government agency operations.

Some question has been raised as to whether GSA appearance in utility

(Please turn to page 47)

Design and Operation of Small Companies

By R. J. POLLOCK

Part 14
Maintenance of Property

A MAINTENANCE program designed to cover all of the plant used in connection with the operation of any telephone company would have to be wide and varied if all functions are to be covered. The cost of such a program should be in direct proportion to what is being done, but it will vary with the length of time the program has been in effect, along with the degree of perfection which is used in carrying it out.

In other words, is it the intent to maintain the plant and equipment in tip-top shape, or are we going to let maintenance go because it is planned to sell the company at some future date when rebuilding costs would make that course advisable. The absence of suitable service rates will have the same effect since a maintenance program cannot be carried out if the necessary funds are not available for that purpose.

Many small company owners have experienced that condition in the past and it could occur again if similar economic conditions are encountered, but the question is how much should an acceptable maintenance program cost. A wide variation can be expected when we consider that the number of stations, their location with respect to the central office, the age of the outside plant, the type of terrain—whether it is wooded, mountainous or flat country—and many other factors will have a direct bearing on the cost figure, either on a per station or over-all basis. Normally, the cost will be less for a magneto plant, compared with either common battery or automatic operation, although the local labor wage rate will be a determining factor.

An approximate cost of a maintenance program on a per station basis can be secured by consulting other companies which are operating in the same area and under like conditions. However, these figures can be expected to vary in accordance with how the maintenance work of the individual companies is being carried out. That is, whether it is a well-balanced program, or whether station, outside plant, or switchboard maintenance is being given extra emphasis for reasons which would not be in effect at other locations. However, on the average basis, if a sufficient number of companies or exchanges are considered, the resultant figure should be within reason.

Much controversy can be expected by stating that the average annual per station maintenance figure in the average small magneto exchange should be from $7.00 to $15 per station, and 20 to 30 per cent higher for common battery manual or automatic operation, but since the factors mentioned above, in addition to varying labor costs, would make this wide variation impractical for general use, it is far better to set it on the hourly basis.

In a magneto exchange having between 500 and 1,000 stations, the hourly maintenance figure should be 2½ hours per station per year. A variation of one-half hour, plus or minus, is reasonable when we consider the various factors, mentioned above. However, considerable deviation can be expected if the production level of the maintenance employes is not average. As was brought out in a previous article, on training company personnel, we can count heads as far as hourly rates or salaries are concerned, but the comparison ends there when production and performance is considered.

A recent study, covering the daily production of five two-man crews working on a metal fabrication job under identical conditions, showed that the production of the top crew was five units per day and that of the bottom one was one unit per day, despite the fact that each crew received the same hourly wages. It would be extreme folly to even vaguely entertain the thought that the same condition does not exist in the telephone field. While this point is not directly a part of the subject being discussed here, it should receive consideration by all telephone companies because it is imperative that they do everything possible to obtain the maximum production from all employes.

Normally, a greater portion of the maintenance cost dollar is spent for station repair, followed by outside plant and central office equipment in that order. Customer handling of the station apparatus may have some bearing on the higher maintenance cost figure, along with instrument design and construction, but neither of them are necessarily controlling factors. A subscriber record card, similar to the one described in Part 11 of this series (TELEPHONY, Feb. 8) will, if it is kept up to reflect all conditions as they occur, be of considerable help in maintaining the plant covering any and all faults. It will also have a tendency to reduce maintenance costs, since recurring conditions will be evident, along with the performance as far as production of the different troubleshooters is concerned. A detail study of this record will, in some cases, reveal conditions which are not evident from any other source.

A trouble ticket carrying a notation of "OK on test" will normally be handled without considerable emphasis, but, should the subscriber record card indicate a number of these conditions, a problem exists which should be checked in detail since one of two conditions exists: Either the subscriber is the type of person who reports trouble when he imagines that his telephone is not functioning properly, or an actual trouble exists which is not in existence at all times. A third possibility exists, and it covers the detection ability of different troublemen, which might not be as evident if the exchange has a testboard man.

In either case, a report of that kind should be run down, not only to correct a trouble condition, if it does exist, but, also, to bolster public relations which are certain to be affected by "trouble."

Recurring trouble will also suggest poor maintenance practices, or other conditions which could indicate partial or complete rebuilding is necessary to eliminate the trouble. The correct procedure may be evident in the case of outside plant or central office equip-

ment, but on the subscriber premises the solution of the problem may not be as simple. Replacement of the interior wire with one of the newer types, which are not as susceptible to basement dampness, may solve the problem, but it should not be overlooked that the operation of some types of telephones are also affected by high humidity conditions, especially in locations where insufficient ventilation exists.

In the larger operating companies, replacement of some of the station apparatus and installations before the normal expected life had expired may not be a matter of any consequence, but in the smaller companies it could be a considerable factor, especially if conversion was not contemplated in the immediate future. It conceivably could require that a request be made for increased rates, in order to keep the plant in acceptable working order.

This necessary maintenance need not be an expenditure which will have to be duplicated at the time of conversion to automatic operation, if some advance planning is done covering the type of ringing which will be used in the new system, because, in that case, interior wire with sufficient conductors could be installed and reused in connection with the new plant. In the event the planning for a conversion to automatic has not been completed, the installation of three conductor wire would not materially add to the total cost, since the installation labor costs would be the same, but it would be in plant if needed for the cut-over.

In a program of this kind, particular attention should be paid to the troubles encountered in connection with station protectors, since tests have shown that the new fuseless types will considerably reduce the recurring station troubles caused by lightning and accidental contact with power company facilities. Some states have not as yet approved this equipment for general use, however, in those locations where considerable fuse and carbon trouble is being encountered, a fuseless type unit can be installed ahead of the one now in service, which should reduce the trouble possibilities and, at the same time, maintain compliance with the electrical safety code. The units are constructed with weather-proof covers so that the installation can be made on the exterior of the premises, which will simplify the maintenance problem.

The aerial plant, covering open wire and cable, gives us some problems as far as maintenance is concerned, which are evident even to those not connected with the business of operating a telephone company. The public, in most cases, will not attach any significance to the brand new lead which must be moved because some town or county board decided it had some extra road construction funds to spend, shortly after they assured the telephone company that the road would remain in its present location for some time to come. However, farmers who also must install new fences on the new right-of-way can visualize what the additional expenditures must be to the telephone company and could, if they would, convey this information to others.

Whether or not outside plant is being maintained properly is obvious to the public. For instance, consider the customer who has a case of trouble and is receiving service at the end of a rural line. In driving to the office to report the condition, he might note conditions on his line such as broken insulators, bad tree conditions, broken poles, etc., and, in many cases, he will make up his mind which one is causing his trouble. Whether or not he is right is beside the point, but the fact that he sees the company is not maintaining its plant has an adverse effect on the company's public relations in general. This type of public reaction can and does affect a company's success in obtaining adequate rates. In other words, the general public is more observant of our operations than would appear on the surface and, therefore, maintenance of outside plant should be given the fullest consideration.

The development of plastic cable seems to have had a marked effect in decreasing cable maintenance costs which will further decrease in proportion to the amount placed in service. A maintenance problem still exists on paper or pulp insulated lead covered cable, especially in the smaller exchange, because the services of a cable splicer are not readily available. Taped splices in this cable, which are the result of repair work being performed by a local troubleshooter, or by a cable splicer who did not take the time to replace the lead sleeve, will result in poor service and maintenance costs which are out of proportion to those normally expected.

The original trouble may have been due to a ring cut or lightning damage, but, in either case, if the sheath was closed with a tape joint and allowed to stand for any period of time (even a week may be too long), additional and recurring trouble can be expected. While the taped sleeve may be waterproof on the completion of the job, it will not remain so very long, as it is very improbable that it would be vaporproof. This latter condition would have a tendency to lower the insulation resistance of the entire cable and make it far more susceptible to lightning damage. It could and would cause noise and ringing conditions which ultimately would require that the cable be replaced far in advance of the end of its anticipated life.

A preventive type of maintenance program, in cases of this kind, can be accomplished by using the neoprene type sleeves now available through telephone supply houses. The installation of such a sleeve does not require a cable splicer, and it will keep out all moisture. It also can be gas-tested for leakage if that procedure is desired.

A number of sleeves in the end span would suggest to the trained observer that possibly the trouble might be due to faulty lightning protection, caused by a poor terminal ground, or that the protection blocks did not have periodic inspection. In either case, if the end portion of the cable in which the trouble is located is replaced with either lead or plastic sheathed cable, the service being supplied through it can be improved greatly.

It will, however, require that the terminal ground be improved, although the decrease in ground resistance need not be as great if the new fuseless type terminal units are used. The junction splice between the old and new cable could be made with a neoprene splice or one of the new type lead sleeve and washer installations, which will not require a lead wiping job and which also can be made without the services of a cable splicer. Incidentally, the appearance of the plant will be improved materially, which is a very valuable asset.

In attempting to meet the growing demand for telephone service, a considerable amount of drop wire has been used by many companies and, in some cases, not too much thought has been given to the resulting maintenance problem. Ultimately, the cost of maintaining the drop wire will be reduced through its replacement with cable, but the costs could have been held to a minimum if rural distribution wire had been installed in the first place. Not only that, but the material and labor costs covering the original installation would have been less and the salvage would have been greater when it became necessary to replace the rural distribution wire with regular cable. Considering the high labor and material costs of today, along with the additional trouble cases which might be encountered if excessive drop wire were used for expansion purposes, management should make the decision as to the use of rural distribution wire. Leaving it up to a station installer or a

(Please turn to page 50)

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

NOW WE LEARN that micro-miniaturization has been attained with the speck-sized transistor for printed electric circuits, developed at the Diamond Ordnance Fuse Labs (DOFL), a branch of the Army Ordnance Corps at the National Bureau of Standards.

By the aid of a powerful microscope the process of fitting a caseless transistor—a tiny die of metallic germanium—into a printed electrical circuit was worked out. Insulated wires, resistors and capacitors are replaced by simple trails of metallic ink, printed on wafer-like plates about the size of a postage stamp.

This new technique permits the use of 200 transistors with associated components in a cubic inch. It is claimed that eventually it may be possible to pack 1,000 transistor units in the same amount of space.

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In Belgium, a charge is payable when a telephone subscriber fails to replace the handset in the cradle. The charge is 20 or 40 francs, depending on whether or not it is necessary to send a workman to the subscriber's premises.

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On this page in the Feb. 22 issue we speculated on the need of PBX operators always inquiring whether the call has been paid for when receiving a toll call. We now have a letter from D. J. Frye, of Hebron, O., in which he gives some excellent information on this subject as follows:

"According to the toll operating practice every toll operator is taught guide phrases to use, and it is always understood that a call is naturally a paid call, or is billed to a third number, credit card or a special billing system.

"Therefore, it is not necessary under any of these conditions to state that a call is collect. If it is placed as a collect call, the toll operator will use her guide phrase and announce it collect.

"Here unnecessary utilization of circuit time is due to the PBX operator. If trained properly she will not question the state of any call, but will accept it as announced by the toll operator.

"Whenever an operator asks, 'Is your call paid?', she is the one wasting time.

"If a call is to be made 'collect,' it will be announced as a collect call. Otherwise, it is always assumed that the call is paid."

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The writer has just completed a most interesting trip out West by air. First, we flew from Washington, D. C., to Chicago by Capital Airlines "Viscount." After spending three pleasant and profitable days with the communicators in Chicago we flew on to Denver on United Airlines and then to Colorado Springs via Braniff International Airways.

In Colorado Springs, we had the pleasure of visiting the North American Air Defense Command (NORAD), with headquarters at Ent Air Force Base. From this nerve center, our defense network stretches north to installations well above the Arctic Circle, and from east to west far beyond the edges of the continent. NORAD is a joint United States-Canadian air defense organization.

The Combat Operations Center is located in a building with no windows, where a battle staff of military experts guards America. Here, the plotting board is mounted on a piece of plexiglass measuring about 20 by 30 feet. Etched on this board is an outline map of the United States, Canada, and portions of the Polar regions.

The mission of the Combat Operations Center is to detect an air attack instantly and to notify all military and Civil Defense units.

From information received around the clock from radar sites, tracks of unidentified aircraft are plotted on the plexiglass board by workers on three different levels. These workers must learn to write backwards so that their notations can be read in the proper order from the front of the board.

If you happened to see the television show, "Wide, Wide World," with Dave Garroway on Mar. 2, you know how important this Combat Operations Center is to the defense of North America. This certainly represents communications at its best for without reliable communications such an operation could not be successful.

While we were in Colorado we found time to visit the Will Rogers Shrine of the Sun, perched high on a mountain and a most inspiring sight. We also had a look at the Garden of the Gods and took a trip through the Cave of the Winds. Heavy snow in the mountains prevented our taking a trip to Cripple Creek or to the top of Pikes Peak. We had not been to Colorado Springs for over 25 years, but we found that these wonders of nature have not lost any of their charm.

Returning from Denver to Washington on a United Airlines DC-7 we had an opportunity to witness aircraft storm warning radar being used to good advantage. The weather was rough and heavy clouds were numerous. We climbed above 20,000 feet.

Even so, we could not pass over, but had to go through. The pilot was able to dodge most of the heavy cloud formations and caused very little discomfort to the passengers.

With this weather radar they can feel their way between clouds and when they do have to pass through one they are able to detect the type of cloud on the other side before they hit it and shake up the passengers. We are now a booster for storm warning radar for aircraft.

The landing at Washington National Airport in a heavy rainstorm was routine.

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In this day and age, after you make money you have to hire an accountant to explain how you did it.

Economic Selection Studies

By JOHN D. DRESSER

Part 5

6.540 *Examples illustrating the various cases in the diagram of Paragraph 6.220 are given in the succeeding paragraphs.*

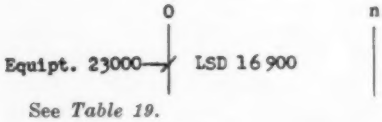
6.541 *Case 1. Existing Plant Removed at the Beginning of the Study Period.*

Equipment costing $23,000 is to be replaced at once. The cost of removal is $1,100, with a gross salvage of $7,200. What is the present worth of this operation?

Since this plant will be removed in this plan at the "0" date, it will not be there to tax nor to maintain, and the investment will be written off the company's books and transferred to whatever will replace this equipment. (See Paragraph 2.323). Therefore, the only charge will be that for lump sum depreciation, not annuity depreciation.

LSD = 1st cost + cost of removal — gross salvage = $23,000 + 1,100 — $7,200 = $16,900.

Diagram for Case 1



See *Table 19*.

6.542 *Case 2. Existing Plant Retained for part of the Study Period; Case 5. Proposed Plant Retained for part of the Study Period.*

Equipment costing $13,500 is to be replaced at the end of the seventh year of a 10-year study period. If the cost of money is 6 per cent, state property tax 1.90 per cent, federal income tax 3.55 per cent, and the maintenance $1,755 annually, what is the present worth of the charges, the net salvage being $2,500 at the time of removal?

Diagram for Case 2.

Diagram for Case 5.

LSD = $13,500 — $2,500 = $11,000. This is the lump sum depreciation at the end of seven years from now. It represents a future worth, and must be converted into a present worth. See *Table 20*.

6.543 *Case 3. Existing Plant Removed at the End of the Study Period; Case 6. Proposed Plant Removed at the End of the Study Period.*

Equipment costing $13,500 is to be replaced at the end of a 10-year study period. If the cost of money is 6 per cent, state property tax 1.90 per cent, federal income tax 3.55 per cent, and the maintenance $1,755 annually, what is the present worth of the charges, the net salvage being $2,500 at the time of removal?

This example is exactly the same as the previous one in Paragraph 6.542, except the equipment is to remain until the end of the study period.

Diagram for Case 3.

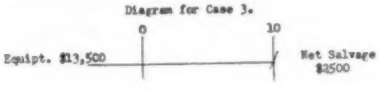
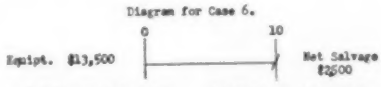


Diagram for Case 6.



LSD = $13,500 — $2,500 = $11,000. This is the complete depreciation at the end of 10 years. It is a future worth which does not occur until the plant is retired at the end of the study period, and must be converted into a present worth to be included with the other present worths. See *Table 21*.

6.544 *Case 4. Existing Plant Retained Beyond Study Period; Case 7. Proposed Plant Retained Beyond Study Period.*

Equipment costing $13,500 has been

ITEM	INVESTMENT	ANNUAL CHARGES		PRESENT WORTH			
		PER CENT	AMOUNT	PERIOD	FACTOR	TABLE	AMOUNT
Equipt. LSD 16,900				0	1.	8	16,900
TOTAL							
EQUATED ANNUAL CHARGE							

TYPE OF PLANT	ANNUAL CHARGE PERCENTAGES						
	Equipt.						
C OF M							
PROPERTY TAX							
INCOME TAX							
DEPRECIATION	LS$16,900						
MAINTENANCE							
TOTAL %							

Table 19

ITEM	INVESTMENT	ANNUAL CHARGES		PRESENT WORTH			
		PER CENT	AMOUNT	PERIOD	FACTOR	TABLE	AMOUNT
Equipment	13,500	11.45	1,546				
Mtce. on equipt.			1,755				
			3,301	7	5.582	11	18,427
Equipt. LSD 11,000				7	.665	8	7,317
TOTAL							25,744
EQUATED ANNUAL CHARGE			3,500	10	7.360	11	

TYPE OF PLANT	ANNUAL CHARGE PERCENTAGES						
	Equipt.						
C OF M	6.00						
PROPERTY TAX	1.90						
INCOME TAX	3.55						
DEPRECIATION	LS$11,000						
MAINTENANCE	$1,755						
TOTAL %	11.45						

Table 20

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ITEM	INVESTMENT	ANNUAL CHARGES		PRESENT WORTH			
		PER CENT	AMOUNT	PERIOD	FACTOR	TABLE	AMOUNT
Equipment	13,500	11.45	1,546				
Mtce. on equipt.			1,755				
			3,301	10	7.360	11	24,295
Equipt. LSD 11,000				10	.558	8	6,142
TOTAL							30,437
EQUATED ANNUAL CHARGE			4,135	10	7.360	11	

ANNUAL CHARGE PERCENTAGES	
TYPE OF PLANT	Equipt.
C OF M	6.00
PROPERTY TAX	1.90
INCOME TAX	3.55
DEPRECIATION	LS$11,000
MAINTENANCE	$1,755
TOTAL %	11.45

Table 21

ITEM	INVESTMENT	ANNUAL CHARGES		PRESENT WORTH			
		PER CENT	AMOUNT	PERIOD	FACTOR	TABLE	AMOUNT
Equipment	13,500	13.95	1,883				
Mtce. on equipt.			1,755				
			3,638	10	7.360	11	26,776
TOTAL							
EQUATED ANNUAL CHARGE			3,638				

ANNUAL CHARGE PERCENTAGES	
TYPE OF PLANT	Equipt.
C OF M	6.00
PROPERTY TAX	1.90
INCOME TAX	3.55
DEPRECIATION	2.50
MAINTENANCE	$1,755
TOTAL %	13.95

Table 22

in service for a number of years in Case 4, or is proposed for installation in Case 7. What is the present worth of the charges over a 10-year period? It is not planned to remove the equipment during the study period. The cost of money is 6 per cent, state property tax 1.90 per cent, federal income tax 3.55, maintenance $1,755, annuity depreciation 2.5 per cent.

Diagram for Case 4.

Diagram for Case 7.

The depreciation in these cases cannot be treated as a lump sum, as the equipment is not being retired, but is being continued in service beyond the end of the study period. The depreciation must, therefore, be taken as a certain per cent per year, the same as C/M and taxes. See *Table 22.*

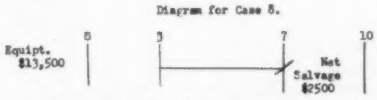
In this example, the same data were used as for the previous two examples, the date of removal being changed. This provides a good opportunity to compare the effect of the removal date upon the present worth.

6.545 *Case 8. Deferred Plant Removed within Study Period.*

Equipment costing $13,500 is to be installed at the end of three years on a temporary basis and is to be removed seven years from now. For a 10-year study period, what is the present worth of the charges on the equipment, if the cost of money is 6 per cent, state property tax 1.90 per cent, federal income tax 3.55 per cent, maintenance $1,755, and net salvage $2,500?

In this example, it will be noted that the annual charges do not begin until three years from now. The removal of the plant within the study period requires the depreciation item to be taken as complete. This item must be "present worthed" through the full seven years, not 7-3 or four years, before inclusion in the present worth of the other annual charges. For the annual charges, the three-year factor must be subtracted from the seven-year factor from *Table 4* to give a factor suitable for the four years of service deferred three years.

Diagram for Case 8.



LSD = First cost — Net salvage = $13,500 — $2,500 = 11,000

From Table 4 factor for seven years — factor for three years = 5.582 — 2.673 = 2.909

See *Table 23.*

It will be noted from the above example that the treatment of the lump sum depreciation has nothing to do with the installation date, but only with the removal date. However, the installation date may govern to some extent the *size* of the depreciation. The depreciation may not be as great on an item in use only a few years as it might be, if it were in use for a longer time. The present worth of the lump sum depreciation depends upon the removal date of the item.

In this example, the lump sum depreciation is converted into a present worth directly by a factor from *Table 1.* Occasionally, it may be desired to convert the lump sum depreciation of a deferred installation into an annual charge before determining the present worth. The annual charge (or annuity) depreciation expressed in dollars or as a per cent, is found by multiplying the lump sum depreciation in dollars or as a percentage of the first cost, by a factor from *Table 2,* not for seven years in this example, but for four years, the time this equipment item was in service. The annuity depreciation thus found may be added to the other annual charges before determining the entire present worth, as in Paragraph 6.532.

6.546 *Case 9. Deferred Plant Removed at end of Study Period.*

Equipment costing $13,500 may be installed three years from now to last to the end of a 10-year study period, at which time it will be removed with $2,500 net salvage. What is the present worth of the charges, if the cost of

(Please turn to page 44)

ITEM	INVESTMENT	ANNUAL CHARGES		PRESENT WORTH			
		PER CENT	AMOUNT	PERIOD	FACTOR	TABLE	AMOUNT
Equipment	13,500	11.45	1,546				
Mtce. on equipt.			1,755				
			3,301	3-7	2.909	11	9,603
Equipt. LSD 11,000				7	.665	8	7,315
TOTAL							16,918
EQUATED ANNUAL CHARGE			2,298	10	7.360	11	

ANNUAL CHARGE PERCENTAGES	
TYPE OF PLANT	Equipt.
C OF M	6.00
PROPERTY TAX	1.90
INCOME TAX	3.55
DEPRECIATION	LS$11,000
MAINTENANCE	$1755
TOTAL %	11.45

Table 23

ITEM	INVESTMENT	ANNUAL CHARGES		PRESENT WORTH			
		PER CENT	AMOUNT	PERIOD	FACTOR	TABLE	AMOUNT
Equipment	13,500	11.45	1,546				
Mtce. on equipt.			1,755				
			3,301	3-10	4.687	11	15,472
Equipt. LSD 11,000				10	.558	8	6,142
TOTAL							21,614
EQUATED ANNUAL CHARGE			2,937	10	7.360	11	

ANNUAL CHARGE PERCENTAGES	
TYPE OF PLANT	Equipt.
C OF M	6.00
PROPERTY TAX	1.90
INCOME TAX	3.55
DEPRECIATION	LS$11,000
MAINTENANCE	$1,755
TOTAL %	11.45

Table 24

TELEPHONY'S Traffic Engineering Handbook

By Gilbert R. Brackett **April 5, 1958**

Section 12 (Continued)
Traffic Engineering
Short-Cuts—Automatic

First Selector Requirements

First selectors are provided on the basis of one selector for each line finder switch. Therefore, the number of first selectors needed will be the same number as the line finders: Required—15 selectors for the one-year period, 16 selectors for the two-year period, and 22 selectors for the five-year period.

Selectors are mounted on shelf units consisting of 10 switches and 10 banks and are built up so that the number of selector banks per group will be in some even multiple of 10. And, so, the selectors required for each year period would be arranged on the selector shelves as follows in order to permit an even distribution of traffic over the selector division:

Selector Shelf	One-Year Switches	One-Year Banks	Two-Year Switches	Two-Year Banks	Five-Year Switches	Five-Year Banks
A	8	10	8	10	8	10
B	7	10	8	10	7	10
C					7	10
Total	15	20	16	20	22	30

Selector Level Requirements

"O" level—According to Item 6, columns 4, 7 and 10, of the *Traffic Distribution Table*, (TELEPHONY, Mar. 22, p. 24), the busy hour CCS which will be offered to the "O" level will be one-year, 32; two-year, 37; and five-year, 52. Referring to the *Trunk Capacity Table*, sub-table 20, it will be found that four trunks will carry both the two-year and five-year traffic.

"9" level—Item 2, columns 4, 7 and 10 of the *Traffic Distribution Table*, the busy hour CCS which will be offered to the ninth level will be one-year, 147; two-year, 174; and five-year, 255. Refer to the Trunk Capacity Table, sub-table 10. It will be found that 10 trunks will carry the one-year traffic, 11 trunks will carry the two-year traffic, the 15 trunks will carry the five-year traffic.

"8" level—Item 3, column 4, 7 and 10 of the *Traffic Distribution Table*, the busy line CCS offered the 8th level (tie trunks) will be one-year, 8; two-year, 9; and five-year 13. Referring to *Trunk Capacity Table*, sub-table 20, it will be seen that three trunks will carry the traffic for all periods.

"7" level to "5" level are vacant.

"4" level—Column 4 of the *Busy Hour Basic Data Table*, (TELEPHONY, Mar. 15, p. 32), shows the originating CCS per line for extension-to-extension traffic is .57. Therefore, the total busy-hour CCS offered the fourth level (connector) level will be:

Hundred Call-Seconds and Per Cent Use at Various Service Levels for Group Sizes of 1 to 30

The table number indicates the number of calls per 1000 encountering all equipment in the group busy

Trunks	TABLE 1 CCS	TABLE 1 % Usage	TABLE 5 CCS	TABLE 5 % Usage	TABLE 10 CCS	TABLE 10 % Usage	TABLE 20 CCS	TABLE 20 % Usage	TABLE 30 CCS	TABLE 30 % Usage	TABLE 40 CCS	TABLE 40 % Usage	Trunks
1	.1	.1	.2	.5	.4	1.0	.7	2.0	1.1	3.1	1.5	4.2	1
2	1.6	2.3	3.7	4.6	5.4	7.5	7.9	10.9	9.7	13.5	11.3	15.7	2
3	6.9	6.4	12.2	11.3	15.7	14.5	20.4	18.9	24.0	22.2	26.9	24.9	3
4	15.4	10.7	24.2	18.8	29.6	20.6	36.7	25.3	41.6	29.9	45.7	33.8	4
5	26.6	14.8	38.9	21.6	46.1	25.6	55.8	31.0	61.6	34.2	66.6	37.0	5
6	40.0	18.5	55.4	25.7	64.4	29.8	76.0	33.2	82.8	38.3	89.3	41.3	6
7	54.7	21.7	73.4	29.1	83.9	33.3	96.8	38.4	105	41.7	112	44.4	7
8	70.9	24.6	92.5	32.1	105	36.5	119	41.5	129	44.8	137	47.6	8
9	88.2	27.2	113	34.9	126	38.9	142	43.8	153	47.2	162	50.0	9
10	107	29.7	134	37.2	149	41.4	166	46.1	178	49.4	188	52.3	10
11	126	31.9	156	39.4	172	43.4	191	48.2	204	51.5	214	54.0	11
12	145	33.6	178	41.2	195	45.1	216	50.0	230	53.3	240	55.6	12
13	166	35.5	201	42.9	220	47.0	241	51.5	256	54.7	267	57.1	13
14	187	37.1	224	44.4	244	48.4	267	53.0	283	56.1	295	58.5	14
15	208	38.5	248	45.9	269	49.8	295	54.3	310	57.4	322	59.6	15
16	231	40.0	273	47.4	294	51.1	320	55.6	337	58.5	350	60.8	16
17	253	41.3	297	48.5	320	52.3	347	56.7	365	59.8	378	61.8	17
18	276	42.6	322	49.7	348	53.4	374	57.7	392	60.5	407	62.8	18
19	299	43.7	347	50.7	373	54.5	401	58.6	420	61.4	436	63.8	19
20	323	44.9	373	51.8	399	55.4	429	59.6	449	62.4	465	64.6	20
21	346	45.8	399	52.8	426	56.4	458	60.6	478	63.2	494	65.3	21
22	370	46.7	424	53.5	453	57.2	486	61.4	507	64.0	523	66.0	22
23	395	47.7	451	54.5	480	58.0	514	62.1	536	64.7	552	66.7	23
24	419	48.5	477	55.2	507	58.7	542	62.8	564	65.3	582	67.4	24
25	444	49.3	504	56.0	535	59.4	571	63.4	593	65.9	611	67.9	25
26	469	50.1	531	56.7	562	60.1	599	64.0	623	66.6	641	68.5	26
27	495	50.9	558	57.4	590	60.7	627	64.5	652	67.1	671	68.9	27
28	520	51.6	585	58.0	618	61.3	656	65.1	682	67.7	701	69.6	28
29	545	52.2	612	58.6	647	62.0	685	65.6	711	68.1	731	70.0	29
30	571	52.9	640	59.3	675	62.5	715	66.2	741	68.6	762	70.6	30
31	597	53.5	667	59.8	703	63.0	744	66.7	771	69.1	792	71.0	31
32	624	54.2	695	60.3	732	63.6	773	67.1	801	69.5	822	71.4	32
33	650	54.7	723	60.8	760	64.0	803	67.6	831	69.9	852	71.7	33
34	676	55.2	751	61.4	789	64.5	832	68.0	861	70.3	883	72.1	34
35	703	55.8	779	61.8	818	64.9	862	68.4	891	70.7	913	72.5	35
36	729	56.3	807	62.3	847	65.4	892	68.8	922	71.1	944	72.8	36
37	756	56.8	836	62.8	876	65.8	922	69.2	952	71.5	975	73.2	37
38	782	57.3	864	63.2	906	66.2	952	69.6	982	71.8	1006	73.5	38
39	810	57.7	892	63.5	935	66.6	982	69.9	1013	72.1	1037	73.9	39
40	837	58.1	921	64.0	964	66.9	1012	70.3	1043	72.4	1069	74.2	40
41	865	58.6	950	64.4	993	67.3	1042	70.6	1074	72.8	1099	74.4	41
42	892	59.0	979	64.7	1023	67.7	1072	70.9	1104	73.0	1130	74.7	42
43	919	59.4	1008	65.1	1052	68.0	1103	71.3	1135	73.3	1161	75.0	43
44	947	59.8	1036	65.4	1082	68.3	1133	71.5	1166	73.6	1192	75.3	44
45	975	60.2	1066	65.8	1112	68.6	1164	71.8	1197	73.9	1223	75.5	45
46	1003	60.6	1095	66.1	1142	69.0	1194	72.1	1228	74.2	1256	75.8	46
47	1030	60.9	1124	66.4	1171	69.2	1225	72.4	1259	74.4	1286	76.0	47
48	1058	61.2	1153	66.7	1201	69.5	1255	72.6	1291	74.7	1317	76.2	48
49	1086	61.6	1183	67.1	1231	69.8	1286	72.9	1322	74.9	1349	76.5	49
50	1115	61.9	1212	67.3	1261	70.1	1317	73.2	1353	75.2	1381	76.7	50

Trunk Capacity Table

Period	Number of Lines		CCS Per Line		Total CCS
One-Year	12	x	.57	=	7
Two-Year	32	x	.57	=	18
Five-Year	92	x	.57	=	52

Referring to the Trunk Capacity Table, sub-table 20, it will be found that two trunks will carry the traffic from the fourth level to the 400 connector group at the one-year period. However, it is not recommended to provide less than three switches to a connector group, so three switches should be installed. This same number of trunks will be provided for the two-year and five trunks will be required to carry the load of the five-year period.

"3" level—The total busy-hour CCS offered to the third (300) connector level will be the same for all periods, that is, 98 lines x .57 CCS per line = 56 CCS. The *Trunk Capacity Table*, sub-table 20, shows that

five trunks will handle the traffic to the 300 connector group for all periods.

"2" level—This level is reserved for second selector assignments.

"1" level—This level is assigned to special code traffic such as information, repair service, etc.

Connector Requirements

In the exchange under study, two connector groups will be provided to care for the estimate of station lines for the one, two and five-year periods. These groups will be designated the 300 and 400 groups. The assignment of lines to these groups will be:

Connector Group	Assignment of Lines 1-year	2-year	5-year
300	98	98	98
400	12	32	92
Total	110	130	190

Connector switches are provided on the basis of one switch to each trunk from the selector level which serves a particular group. The following table shows the number of trunks which will be connected with those levels together with the number of connector switches necessary to handle the terminating traffic:

Selector Level	Trunks Required 1-year	2-year	5-year	Group Number	Connectors Required 1-year	2-year	5-year
3	5	5	5	300	5	5	5
4	3	3	5	400	3	3	5

Intercepting Trunks Required

The number of intercepting trunks at the larger exchanges should be provided on the basis of one trunk per 100 connector terminals. At small offices all vacant selector levels and all vacant connector terminals may be arranged to provide a busy tone.

Switchboard Positions Required

The various classes of busy-hour calls handled by the operators are converted into operating units by use of the accompanying table entitled, *"PBX Switchboard Base Coefficients."*

The number of positions is then determined by dividing the total operating units by the proper basic operating load. This is done by tabulating the number and class of calls handled by the operators. The number of each class of calls is then multiplied by the coefficient for that class of call, converting the calls into operating units. The total operating units, as computed for all classes of calls, is then divided by the operating load one operator can carry, and the result gives the number of switchboard positions needed to handle the traffic.

The following table shows the class and number of calls handled by the operator according to Items 4, 5, 6 and 8 and Columns 3, 6 and 9 of the *Traffic Distribution Table*, together with their respective coefficients:

Item	Class of Call	B.H. CALLS 1-Yr.	2-Yr.	5-Yr.	Coef.	B.H. UNITS 1-Yr.	2-Yr.	5-Yr.
4	Opr. to L.D.	3	4	6	10.00	30	40	60
5	Miscellaneous	13	16	23	1.50	20	24	35
6	Ext. to "O" level	32	37	52	1.50	48	56	78
8	Inc. from C.O.	132	156	228	1.65	218	257	376
9	Ref. to base dir.	6	12	40	1.30	8	16	52
10	Add'l. pull of dial	264	312	456	.11	29	34	50
					Total	353	427	651

Period	B.H. Operating Units		Operator Unit Load		Positions Required
1-Year	353	÷	200	=	1.77 or 2
2-Year	427	÷	200	=	2.14 or 3
5-Year	651	÷	220	=	2.96 or 3

(Section 12 will be continued next week)

BASE COEFFICIENTS

	Class of Call	Hotels Refer Also To	Coef.	Other Than Hotels Refer Also To	Coef.
	Miscellaneous				
1	Extension to Extension - Ext. or Tie Line to Manual Tie Line*	22, 25 to 34, 36, 38, 39	1.00	25 to 34, 36, 38, 39	.90
2	Incoming to Extension other than Department Store*	22, 26 to 34, 36	1.40	21, 26 to 34, 36	1.15
3	Incoming to Extension - Department Store*	-	-	21, 26 to 34, 36	1.65
4	Orders by Telautograph*	38, 39	4.00		-
5	Morning Calls*		1.40		-
	Outgoing to Manual Central Offices				
6	Local - Passed by Attendant*	20 to 26, 35, 37 to 39	1.60	21, 23 to 26, 35, 37 to 39	1.60
7	Calls Passed by Extension (Attendant connects trunk)*	23, 37 to 39	.90	23, 37 to 39	.90
	Outgoing to Dial Central Offices				
8	Local - Dialed by Attendant (4 Calls)*	20 to 26, 28, 35, 37 to 39	1.50	21, 23 to 26, 28, 35, 37 to 39	1.50
9	Calls Dialed by Extension (Attendant connects trunk)*	23, 37 to 39	.90	23, 37 to 39	.90
	Toll				
10	"A" Board - Attendant passes or dials*	20 to 22, 24, 25, 35, 37 to 39	4.00	17, 21, 24, 25, 35, 37 to 39	4.00
11	"A" Board - Att. passes - Includes Receiving Time and Charges*	20 to 22, 24, 25, 37 to 39	5.60		-
12	Toll Board - Extension passes - Via Toll Terminal or Direct Recording Trunk	19, 37 to 39	.90	18, 23, 37 to 39	.90
13	Toll Board - Extension passes - Via Central Office Trunk*	19, 37 to 39	1.35	18, 23, 37 to 39	1.35
14	Toll Operator Calls and Announces Time and Charges*	20, 22	5.00		-
15	Toll Board - Attendant Records and Passes*		-	18, 24, 37	10.00
16	Toll Board - Attendant Records and Passes - Includes Receiving Time and Charges*	20, 22	15.00		-

ALLOWANCES FOR OPERATING METHOD

	Operating Method	To Be Added To	Allowance	To Be Added To	Allowance
17.	Receiving Time and Charges - "A" Board Toll Calls*		-	18	2.00
18.	Receiving Time and Charges - Toll Board Calls*		-	12, 13, 15	3.00
19.	Passing Room Number to Toll Operator	12, 13	1.20		-
20.	Quoting Charges	6, 8, 10, 11, 14, 16	1.80		-
21.	Announcing Calling Party to Called Station*	6, 8, 10, 11	2.50	2, 3, 6, 8, 10	2.50
22.	Verify Calling or Called Extension - Name against Room Number*	1, 2, 6, 8, 10, 11, 14, 16	1.90		-
23.	Ticket Work*	6 to 9	.60	6 to 9, 12, 13	.60
24.	Reference to Exchange Directory	6, 8, 10, 11	4.00	6, 8, 10, 15	4.00
25.	Extension Hung Up	1, 6, 8, 10, 11	3.70	1, 6, 8, 10	3.70
26.	Taking and Delivering Messages*	1, 2, 6, 8	6.50	1, 2, 3, 6, 8	6.50
27.	Taking Messages*	1, 2	4.50	1 to 3	4.50
28.	Each Additional Pull on Dial Calls*	1, 2, 8	.08	1, 2, 3, 8	.08
29.	Completion to Repeating Tie Line*	1, 2	.45	1 to 3	.45
30.	Conference Calls*	1, 2	*	1 to 3	*
31.	Reference to P.B.X. Directory	1, 2	1.30	1 to 3	1.30
32.	Reference to Centralized Directory Over Tie Lines or Trunks*	1, 2	3.60	1 to 3	3.60
33.	Reference to Centralized Directory Over Call Circuit*	1, 2	2.80	1 to 3	2.80
34.	Paging*	1, 2	5.50	1 to 3	5.50
35.	Timing Calls*	6, 8, 10	.40	6, 8, 10	.40
		To Be Deducted From		To Be Deducted From	
36.	Machine Ringing	1, 2	.07	1 to 3	.07
37.	Individual Busy Signals and Idle Trunk Indicating	6 to 13	.05	6 to 10, 12, 13, 15	.05

MODIFICATION FOR MULTIPLE EXTENSION LINE LAMPS

	To Be Applied To	Coefficient to be Multiplied By
38. Lamps Multiplied once (2 appearances) *	1, 4, 6 to 13	.90
39. Lamps Multiplied twice (3 appearances) *	1, 4, 6 to 13	.80

PBX Switchboard Base Coefficients

Recent Rural Telephone Loans Announced By REA

THE Rural Electrification Administration has approved the following rural telephone loans:

Reserve (La.) Telephone Co.; $124,000; Mar. 10.

The borrower plans to use these funds to provide for an increase in the proportion of private and semi-private lines, to furnish PABX service to two proposed plants in the area, and to complete its authorized system.

REA loans to this borrower total $530,000 which will enable it to provide new and improved service to 1,278 subscribers. Two automatic exchanges at Garyville and Reserve are in operation serving approximately 870 subscribers.

Daniel A. Madere is both president and manager of the Reserve Telephone Co.

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Florence (Miss.) Telephone Co.; $249,000; Mar. 11.

These funds will be used by the borrower to provide facilities to serve 508 new rural subscribers in the area not included in prior loans, and to provide for an increase in the proportion of private and semi-private lines.

With its total REA loans of $1,094,000, the Florence company will be able to furnish new and improved service to 2,405 rural subscribers. The completed system will consist of exchanges at Bassfield, Florence, and Prentiss. The Florence central office is in operation.

Webb D. Shivers is president and manager of the Florence Telephone Co.

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West Side Telephone Co., Laurel Point, W. Va.; $67,000, Mar. 11.

These funds will be used by the borrower to provide facilities to serve 161 rural subscribers who were not included in a prior loan, 113 of which are farm families now without telephone service. In addition, the loan will provide for an increase in the proportion of private and semi-private lines, and will enable the borrower to complete its authorized system.

REA loans to the West Side company total $215,000 which will make possible new and improved service to 531 subscribers through the Laurel Point exchange.

Cecil Dodrill is president, and D. C. Dodrill is manager of the West Side Telephone Co.

•

West Tennessee Telephone Co., Bradford; $148,000; Mar. 11.

The borrower plans to use these funds to improve service for 210 existing subscribers and to furnish initial service to 80 rural families.

The present subscribers are now receiving magneto service from the Atwood Telephone Co., which the borrower proposes to acquire, rehabilitate and integrate. The Atwood service area is located adjacent to the borrower's Trezevant exchange.

Present plans include a new automatic central office at Atwood. The three REA loans, totaling $841,000, will enable the borrower to furnish new and improved service to 2,013 rural subscribers. The Bradford and Rutherford exchanges are in operation. Atwood and Trezevant are the two remaining exchange areas.

Dr. W. W. Davis is president and N. V. Ferguson is manager of the West Tennessee Telephone Co.

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Tygart Valley Telephone Co., Mill Creek, W. Va.; $286,000; Mar. 12.

The new borrower plans to use these funds to improve service for its 535 existing subscribers and to furnish initial service for 186 rural families in its area. The Tygart company is presently furnishing common battery and magneto service.

According to the current schedule, automatic facilities will replace the present Mill Creek central office equipment.

Byron Woods is president and manager of the Tygart Valley Telephone Co.

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Coleman County Telephone Cooperative, Santa Anna, Tex.; $280,000; Mar. 13.

These funds will enable the borrower to provide improved service for 94 rural subscribers and to furnish initial service to 64 farm families. The cooperative proposes to acquire the Burkett Telephone Exchange which now provides magneto service to the 94 subscribers.

Present plans include a new automatic central office at Burkett. With its two REA loans, which total $820,000, the cooperative will be able to furnish new and improved service to 1,190 rural subscribers. The system will consist of five exchange areas. The Mozelle, Rockham, and Trickham exchanges are in operation.

Toll service for the whole system will be handled through the Santa Anna automatic central office. Subscribers in all of the other exchanges will be able to call Santa Anna without toll charge, according to the borrower's present plans.

Raymond McElrath is president of the Coleman County cooperative. Allyn W. Gill is manager.

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Byers-Petrolia Telephone Co., Inc., Byers, Tex; $216,000; Mar. 14.

The new borrower plans to use these funds to improve service for its 415 existing subscribers and to furnish initial service to 108 farm families in its area. The company now provides magneto service through central offices at Byers and Petrolia. Scheduled plans include new automatic central office buildings in Byers and Petrolia.

Gordon C. Holmes is president and manager of the Byers-Petrolia Telephone Co.

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Brazoria (Tex.) Telephone Co.; $315,000; Mar. 17.

These funds will be used by the borrower to furnish initial service to 1,006 rural subscribers. In order to serve these additional subscribers the company plans to construct a new automatic central office at Churchill.

The two REA loans, totaling $710,000, will enable the Brazoria company to furnish new and improved service to 2,195 rural subscribers. The completed system will consist of exchanges at Brazoria and Churchill. The borrower plans service without toll charge for subscribers between the two exchange areas.

Charles A. Hendrix is president of the Brazoria Telephone Co.

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Mutual Telephone Co., Houlka, Miss.; $239,000; Mar. 18.

The new borrower plans to use these funds to provide initial service to 382 farm families in its area, and to improve service for its 139 existing subscribers. At present the company is furnishing common battery service.

The REA loan will enable it to convert the existing system to automatic operation and to construct a new automatic central office in Houlka.

J. H. Atkinson is president and manager of the Mutual Telephone Co.

Thorsby Telephone Co., Inc., P.O. Box 1884, Montgomery, Ala.; $232,000; Mar. 20.

These funds will be used by the new borrower to furnish initial service to 377 farm families and to improve service for its 261 subscribers. Scheduled construction includes a new automatic central-commercial office building in Thorsby, and an automatic office in Jemison. The existing automatic equipment at Thorsby will be transferred to Jemison, and new automatic facilities installed in the Thorsby building.

E. L. Robinson is president and manager of the Thorsby Telephone Co.

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Udall (Kan.) Telephone Co.; $88,000; Mar. 21.

The borrower plans to use these funds to serve additional territory in order to bring new and improved service to 144 rural families. As a nucleus for the new service, the Udall company proposes to acquire the Rock Rural Telephone Co. of Rock, Kan., for a nominal sum, and to integrate it. The Rock company now furnishes magneto service to 98 subscribers.

Present plans include a new automatic central office at Rock. Expansion and improvement in the Rock area will enable the Udall company to furnish initial service to 46 farm families.

REA loans to this borrower, totaling $241,000, will result in new and improved service to 521 rural subscribers. The completed system will consist of exchanges at Udall and Rock.

Pat C. Hurd is president and manager of the Udall Telephone Co.

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Souris River Telephone Mutual Aid Corp., Velva, N. D.; $233,000; Mar. 21.

These funds will be used by the borrower to finance the construction of a new automatic central office to serve 630 new subscribers on the Minot Air Force Base.

This REA loan brings the total borrowed by the Souris River system to $4,555,000 which will enable it to furnish new and improved service to 6,265 rural subscribers. With the new Minot area the borrower's system will consist of 24 exchanges. Five of the exchanges have been cut over to automatic operation.

Raymond Vendsel is president and Paul A. Froemming is manager of the Souris River company.

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Cities Telephone Co., Chapel Hill, Tenn.; $402,000; Mar. 21.

These funds will be used by the borrower to improve service for 511 subscribers and to furnish initial service to 274 rural families. In order to provide this new service, the borrower plans to expand its operating area.

The Cities company has recently acquired the following telephone properties which were furnishing magneto service to the existing subscribers; Unionville Telephone Co.; Estill Springs Telephone Co.; and the Flat Creek Telephone Co. The borrower has also recently replaced the Unionville magneto central facilities with a new automatic central office building.

It plans to construct new automatic central offices at Estill Springs and Flat Creek. Its four REA loans, totaling $1,021,000, will enable the borrower to serve 1,964 rural subscribers. The system will consist of seven exchange areas. The Belfast, Chapel Hill, College Grove, and Nolensville areas are in operation.

L. C. Brayton Jr., is the president and Wilmon Varnado is the manager of the Cities Telephone Co.

When nine-year-old Alice Ann Alexander made her first call on the new telephone installed on her parent's farm near Rushville, Ind., she had many eavesdroppers, including her sister, Myra Jo. The occasion marked the 300,000th telephone installation made by General Telephone Co. of Indiana. Among those attending the ceremony were Lt. Gov. Crawford Parker, L. H. Meyer of Fort Wayne, president of General of Indiana, and J. F. Van de Vusse of Fort Wayne, operating vice president. During 1947 the company gained approximately 14,000 telephones. It expects to gain 16,000 more in 1958, and a long-range survey predicts that by 1968, the company will be serving over 500,000 telephones in its present area. In 1957 General of Indiana's construction budget was $13,616,000; in 1958, a record-breaking 14½ million dollars.

Regarding Generalizations

"All generalizations are dangerous, even this one."—DUMAS, FILS.

South Dakotan Named National Co-op Officer

B. Maynard Christenson of Volin, S. D., has been named secretary-treasurer of the National Telephone Cooperative Association, Washington, D. C., it was reported on Mar. 17.

Mr. Christenson also is chairman of the board of the Dakota Cooperative Telephone Co.., Inc., which has headquarters at Irene and which serves patrons in 10 towns, and two additional rural areas in southeastern South Dakota. He is a member of the board of the South Dakota Rural Co-op Telephone Association.

He is the first man from his state on the national telephone co-op's board.

Mr. Christenson has been employed by the Post Office Department for 24 years—18 as postmaster at Volin and the past six as a rural mail carrier in the Volin area. He also operates a farm.

Double Entry System

"Business must account for its stewardship not only on the balance sheet, but also in the matters of social responsibility."—ROBERT F. WOOD, *Retired chairman, Sears, Roebuck & Co.*

Pole Climbing Equipment

By JOHN A. BRACKEN

Part 3

IT IS generally understood that in performing telephone pole line construction, replacement and maintenance work, the element of safety requires that special precautions be continually applied in order to prevent accidents to workmen and the public in general. Therefore, it usually is the practice of plant personnel, prior to working on or about a telephone pole, to make a complete inspection of the pole and its surroundings for possible hazards.

In this respect, the following is an outline of conditions to look for in such inspections:

(1) Pole surface condition, such as: (a) Badly split wood; (b) brittle wood from surface weather cracking *(Fig. 1)*; (c) charred from fire; (d) excessive knots and hard spots; (e) lightning damage; (f) long and deep weather cracking *(Fig. 2)*; (g) metal signs, nails, abandoned hardware; (h) old and excessive climber gaff damage; (i) rot; (j) sticking snow and ice; (k) termite undermining; (l) woodpecker holes.

Fig. 1

If the condition of the pole and immediate surroundings are obviously hazardous, no attempt should be made to work on or about the pole.

Fig. 2

(2) Under certain soil conditions, untreated telephone poles become badly deteriorated below the ground line; this is usually detected by the workman placing a 12-foot, or longer, pike pole against the field or road side of the telephone pole at an angle of about 45 degrees, as shown in *Fig. 3*. He then rocks the pole back and forth at right angles to the telephone line wire, taking care not to allow the line wires to become crossed from rocking the pole too hard.

If the telephone pole is heard to crack or break when rocked, it is regarded as being unsafe to climb.

Where impractical to make a pike pole test, a similar test is sometimes made by simply throwing a handline over a fixed attachment on the pole, such as a cross arm or pole step, then the hand line is passed completely around the pole at a height above the ground where the pull on the pole can be applied at right angles to the direction of the line at an angle of 45 degrees. The same procedure and precautions given for making the pile pole test are applied to this method.

Hidden hazards within the interior of the pole, are detected by means of the sound produced when hammer blows are applied completely around the pole surfaces close to the ground, as shown in *Fig. 4*, to a level as high as can be reached. The presence of internal decay is recognized by hollow or dull sounds which change noticeably as a result of the hammer blows passing from good wood to bad up and down, and around the pole.

If the pole is free from internal decay, a clear sound will be heard, and the hammer tends to rebound from the wood when the pole is struck sharply and squarely.

(3) Pole climbing interferences: (a) Condition around base of pole, such as stones, animal holes, uneven ground, rubbish, etc.; (b) fences; (c) foreign attachments, such as antennas, clothes lines, signs, etc.; (d) flood washouts; (e) improperly separated aerial plant; (f) poison ivy or oak; (g) projections; (h) closeness of pole to a building; (i) pole hot (electrically charged); (j) risers, ground wires, and aerial guys; (k) road construction; (l) sleet; (m) shrubs, trees and vines; (n) service boxes, signal lights, etc.

Fig. 3

In addition to pole climbing interference, there are hazards which interfere with performing the work safely as: (a) Doubtful safeguards; (b) drop wire leaving pole at non-standard levels and from wrong quarter of pole; (c) ground and aerial guys which come in contact with power company plant which are improperly insulated or inadequately grounded; (d) less than minimum horizontal and vertical separation between the telephone company's aerial plant and that of others; (e) miscellaneous equipment attached to jointly used pole; (f) non-standard ground wire separation; (g) non-standard foreign wire clearances, or actual contact created by abnormal wire loading resulting from storm conditions; (h) power transformers; (i) power circuits; (j) several men on same pole; (k) street-light brackets; (l) unsafe conditions caused by others.

Electricity is one of the most dangerous things that men working on telephone poles have to contend with; consequently every known safety precaution should be taken to guard against shock.

For example, when working in close proximity to power circuits and equipment, the worker should avoid coming in contact with them, as they usually are very much "alive."

However, if it is necessary to handle power circuits or equipment, or any other circuit foreign to the telephone plant, a pair of rubber gloves, known to be in good condition, should be worn.

Fig. 4

High voltage power circuits near, or paralleling telephone pole leads, frequently induce considerable voltage in the telephone circuits. Although the effect of the induced voltage does not usually cause direct injury to the men working on a telephone pole, the element of surprise when the induced voltage is unexpectedly felt, may cause him to do things which would result in a serious accident. Therefore, it is important to recognize a hazard of this nature at once, and take necessary precaution to avoid serious consequences.

Telephone companies, like certain other utilities, occupy public property, but unlike other utilities, a telephone company occupies private property to a great extent, consequently, the telephone company is under obligations to take necessary precautions to protect the property rights of both the general public and the customer.

Accordingly, it is the direct responsibility of the plant personnel, when performing work on or about telephone poles located on public and private property, to: (a) Establish reasonable safeguards against accidents, especially where children are involved; (b) avoid obstructions that may interfere with highway traffic, entrance to alleys, private driveways, sidewalks, etc.; (c) where necessary signs warning of danger should be used; (d) take care to cause only negligible amount of damage to buildings, trees, shrubbery, flower beds and lawns, and leave no debris lying around after completing the job.

Courteous apologies should be made to the customer for any annoyances caused while on or about the customer's premises.

No matter what else may be done to insure good public and customer relations, courtesy is the key. The effect of a real expression of courtesy is amazingly far-reaching, there being no one single item that has so much to do with establishing pleasant public and customer relations on a permanent basis.

The End

Plan Communications Link For 3 Baghdad Pact Allies

Turkey's capital city of Ankara will be linked to the capitals of three of its Baghdad Pact allies—Iran, Iraq, and Pakistan—by a new network of modern telephone and telegraph communications, and by improved highway and railroad systems, it was reported recently.

The project, approved by the Economic Committee of the Baghdad Pact, will be based on a survey under a contract let by the International Cooperation Administration. The United States has been a member of the Baghdad Pact's Economic Committee since November, 1955.

New Cable Added Between Britain and Belgium

A new 120-circuit submarine telephone cable between Great Britain and Belgium is being laid by the British Post Office Cable Ship Iris. The joint scheme is shared between the two countries and will cost approximately $980,000.

The present daily average traffic on the route is 1,700 calls and this number is increasing by about 10 per cent every year. The cable is expected to be in operation in time to meet the extra traffic anticipated from the Brussels World Fair.

Big Business Doesn't Always Mean Big Owners

Who owns big business?

Contrary to popular notion, says the Chamber of Commerce of the United States, the larger companies usually are owned by the smaller stockholders.

Small firms, on the other hand, principally are owned by the larger stockholders.

That's why proposals now before Congress for a graduated income tax on corporations are basically unsound and unfair, according to the chamber. The tax would actually fall on the individual—either the consumer or the stockholder or both—and they are not necessarily big simply because the corporation is big.

There is no justification, says the chamber, for reducing the dividend of the small stockholder or increasing the price to the small consumer simply because one is the owner and the other a customer of a larger company.

The tax proposals are described as "an aid to small business." But the chamber points out that once the principle of increasing corporate tax rates as corporate income goes up, is accepted, the rates can always be steepened toward the bottom, as happened with the individual income tax rates. This would put a crushing burden on small business.

March Of Time

"All of those things that are now held to be of the greatest antiquity were at one time new; what we today hold up by example will rank hereafter as precedent."—TACITUS.

From the Owner's Point of View-

2

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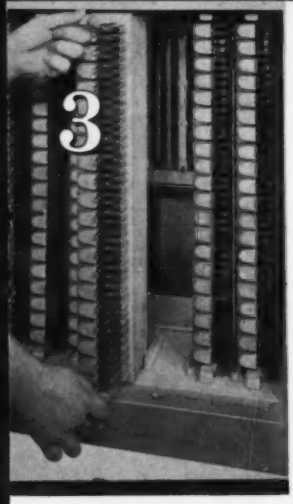

When you decide to invest in a dial switchboard, we hope you'll consider this fact. There are now over 1,000 Leich Dial Systems in service. And there are good reasons for this popularity. Leich Dial Systems are economical to install, operate, and expand.

1. Installation It only takes about 80 man-hours per 100 lines to install a Leich Dial System. All equipment comes in small packages, factory tested, ready to be jacked-in.

2. Operation The Leich Dial System is an all-relay dial switchboard—famous for its reliability of operation and long life. Leich relays have been tested for millions of operations with no failures.

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Courts and Commissions

Ill. Court Upholds Exchange Boundary Line Ruling

The Christian County (Ill.) Circuit Court recently ruled that the Illinois Consolidated Telephone Co., Mattoon, did not have to furnish service to a subscriber, now served from its Owaneco exchange, from its Pana exchange, even though he resides 150 feet away from a rural Pana line.

The subscriber was appealing a decision of the Illinois Commerce Commission which ruled that he was entitled to service from the company's Owaneco exchange only.

Testimony before the commission proved that under a boundary map which was filed in 1953, he was within the boundaries of the Owaneco exchange.

The subscriber resides in the unincorporated area of Millersville and at the time the boundary map was filed, this area had five subscribers through the Pana exchange and 10 through the Owaneco exchange.

After the map was filed these five Pana subscribers were frozen and it was planned that any future subscribers would receive service from Owaneco. The subscriber who filed the complaint has been served from the Owaneco exchange for a number of years.

SW Bell Asks Intrastate Toll Raises in Missouri

Rate increases for three types of intrastate toll calls are being sought by Southwestern Bell Telephone Co. before the Missouri Public Service Commission, it was announced on Mar. 21.

The proposed increases, which would yield an estimated $500,000 in additional revenue would apply to the following Missouri intrastate long-distance calls: person-to-person calls of more than 28 miles; reverse-charge, station-to-station calls of more than 14 miles, and special reverse-charge "Enterprise" long-distance service used by some business firms.

Proposed increase in the basic rate for person-to-person calls of more than 28 miles would be five to 15 cents, depending on distance. The additional charge for collect station-to-station calls of more than 14 miles would be 10 to 25 cents, also depending on distance.

The special reverse-charge "Enterprise" service, which permits a business firm in one community to offer free long-distance calling to customers in another exchange, would be increased $2.00 per exchange each month.

OK Raise for New York Independent; Consider Merger

The New York Public Service Commission granted a rate increase to the Woodhull Telephone Co., effective Mar. 15. The commission estimates that the new rates will produce about $1,360 in additional revenue. The company has 190 subscribers.

The monthly rates are as follows:

	Old	*New*
One-party residence	$2.50	$3.50
Party-line residence	2.00	2.60
One-party business	3.50	5.75
Five-party rural business	2.50	5.00*
Multiparty rural business	2.50	4.10

*replaced by two party service

The commission has under consideration the company's proposed merger with the Addison Home Telephone Co., an affiliate.

N. Y. Commission Sees Future Rate Uptrend

An "inflationary tide" is pushing operating costs of utilities higher and will make it hard to hold the line on rate increases, the New York Public Service Commission warned in its annual report on Mar. 14.

The commission said that public utilities in the state last year sought increases totaling $83,932,400 and were allowed $56,297,000. Rate reductions in the same 12 months amounted to $2,118,000.

"In the face of mounting prices all along the line of the national economy, it will be impossible to resist indefinitely the increase in the cost of all utility services," the commission said.

N. Y. Legislature OKs Bill On Highway Relocation Aid

A bill to exempt public utility companies from the cost of relocating their facilities when necessitated by construction of federally-aided highways was given final passage by the New York State Legislature on Mar. 19 and sent to the governor for signature (TELEPHONY, Mar. 15, p. 38).

It was estimated that the measure would save utilities 78 million dollars in the next few years.

Deny Interim Raise In Wash. For Pacific Telephone

Washington's Public Service Commission decided on Mar. 8 that the Pacific Telephone & Telegraph Co. will have to wait until after July 12 for any rate increase (TELEPHONY, Jan. 11, p. 54).

The commission announced denial of the company's request for an interim increase in long-distance tolls and charges for nonrecurring services. The interim raise request was for 3.8 million dollars. The permanent raise requested would amount to 9.25 million dollars annually.

Commission Chairman Francis Pearson said the interim boost was denied because of the short time until July 12, by which date a decision must be made on the permanent rates. A hearing on the permanent rate request was scheduled to reconvene on Mar. 24.

Ask Purchase OK In Ala.

The Alabama Public Service Commission has scheduled a hearing date in April on the petition of the Ardmore Telephone Co. to buy the New Market Telephone Co. and the Elkmont Telephone Co.

Asks to Pass on City Taxes

The Eldorado Springs Telephone Co. on Mar. 24 filed an application with the Missouri Public Service Commission for authority to file with its tariff

News about

B.F.Goodrich Chemical *raw materials*

Control cable lasts longer with insulation of Geon

CABLE insulated and jacketed with Geon polyvinyl materials is lightweight, easy to install and splice. No braids to rot or wick moisture; no lead to corrode or be eaten away by electrolysis.

Insulation compounds of Geon are strong, weatherproof, keep their exceptional properties with age. They resist flame, will not support combustion, and have good flexing properties. They also resist oil, grease and chemicals.

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schedule a rule authorizing the passing on to its subscribers franchise or occupation taxes levied by the city.

OK Increase for Ohio Co.; 2nd Independent Asks Raise

The Ohio Public Utilities Commission on Mar. 5 granted the Columbia Telephone Co. a $5,247 annual rate increase (TELEPHONY, Sept. 7, p. 40).

One-party residence rates will rise from $3.50 to $6.00 a month, five-party residence rates from $2.75 to $3.50 and 10-party residence rates from $2.25 to $2.75.

•

Also in Ohio, the Elyria Telephone Co. on Mar. 5 filed an application for a rate increase with the Ohio Public Utilities Commission.

Authorize Sales of Two Minnesota Independents

On Mar. 13 the Carlos Telephone Co., Alexandria, was authorized by the Minnesota Railroad & Warehouse Commission to sell its property to the Alexandria Interurban Telephone Co. The Carlos company operates exchanges at Carlos and Holmes City.

The commission on Mar. 17 authorized the Chisago County Mutual Telephone Co., Center City, to sell its property to the Chisago City Telephone Co.

S. C. Company Asks Sale to Bell

A hearing on the sale of the Central Telephone Co., Inc. to Southern Bell Telephone & Telegraph Co. was scheduled on Mar. 19 before the South Carolina Public Service Commission.

OK Sale of Ill. Company

The Montrose Mutual Telephone Co., Dieterich, recently was authorized by the Illinois Commerce Commission to purchase the Union Telephone Co. of Elliottstown (TELEPHONY, Jan. 11, p. 56).

Ill. Company Asks Bell Sale

A hearing was scheduled on Apr. 2 by the Illinois Commerce Commission on the application of the Farmington Telephone Co. to sell its plant and properties to the Illinois Bell Telephone Co.

Grant Sale of Ohio Mutual

The Ohio Public Utilities Commission recently authorized sale of the Beaver Mutual Telephone Co., Glade, to the General Telephone Co. of Ohio. General plans a conversion to automatic operation.

Two Minnesota Independents Granted Rate Approval

The Minnesota Railroad & Warehouse Commission on Mar. 17 authorized increases in rates for the Minnesota Central Telephone Co., Hector, and on Mar. 24 raises for the Green Lake Telephone Co., Spicer.

In considering the Minnesota Central company's rate plea, the commission noted that at present the company is completely rehabilitating its Raymond, Lake Lillian, Kandiyohi, and Svea exchanges, and that it has been allocated additional REA funds ($291,000) to rehabilitate the Prinsburg exchange.

The total rate base after rehabilitation will be $1,342,118, which includes an amount for adjustment of present plant value to recognize current value, as well as an allowance for materials and supplies, and cash working capital.

New rates are to be effective the first billing date following Mar. 31 at the Raymond, Lake Lillian, Cosmos, Hector, Palmyra, Svea and Kandiyohi exchanges. Rates approved for the Belgrade, Elrosa and Prinsburg exchanges will be effective when the dial service program at these exchanges has been completed.

When all of the approved increased rate schedules have been effected, the Minnesota Central's net operating revenus will have risen from the present $165,016 to $195,394 and net income from $24,905 to $41,840, the latter figure being a 3.1 per cent return on the approved rate base.

Minnesota Central serves 2,636 stations and furnishes Extended Area Service (EAS) between various combinations of its exchanges plus one other Independent and one Bell exchange. Following are the approved block rates giving effect to these EAS service arrangements:

	(1) *0 to 1000 stations*	(2) *1001-1500 stations*	(3) *1501-2000 stations*	(4) *2001 and over stations*
Business				
One-party	$6.75	$7.00	$7.25	$8.00
Two-party	5.75	6.00	6.25	6.50
Rural multi-party	4.75	5.00	5.25	5.50
Combined bus.-res.	10.50	11.00	11.50	12.00
Residence				
One-party	4.25	4.50	4.75	5.00
Two-party	3.75	4.00	4.25	4.40
Four-party	3.25	3.50	3.75	3.90
Rural multi-party	3.75	3.75	4.00	4.25
Miscellaneous				
Switching Service	1.50	....	....	1.50*
Mileage charge for service beyond local base rate area, each one-tenth mile or fraction thereof:				
One-party	.30	.30	.30	.30
Two-party, each subscriber	.20	.20	.20	.20
Four-party, each subscriber	.15	.15	.15	.15

(1) Raymond, Prinsburg, Lake Lillian, Belgrade and Elrosa
(2) Cosmos
(3) Hector and Palmyra
(4) Kandiyohi and Svea
*Kandiyohi only

Also granted the Minnesota Central company were colored handset installation charges of $7.50 for a standard full color (other than black) and $5.00 for a two-tone; Electronic Secretary, $12.50 per month, plus a $15 installation charge; Electronic Secretary with call-back feature, $18.50 plus a $25 installation charge. A loudspeaker telephone rate is $5.00 additional per month.

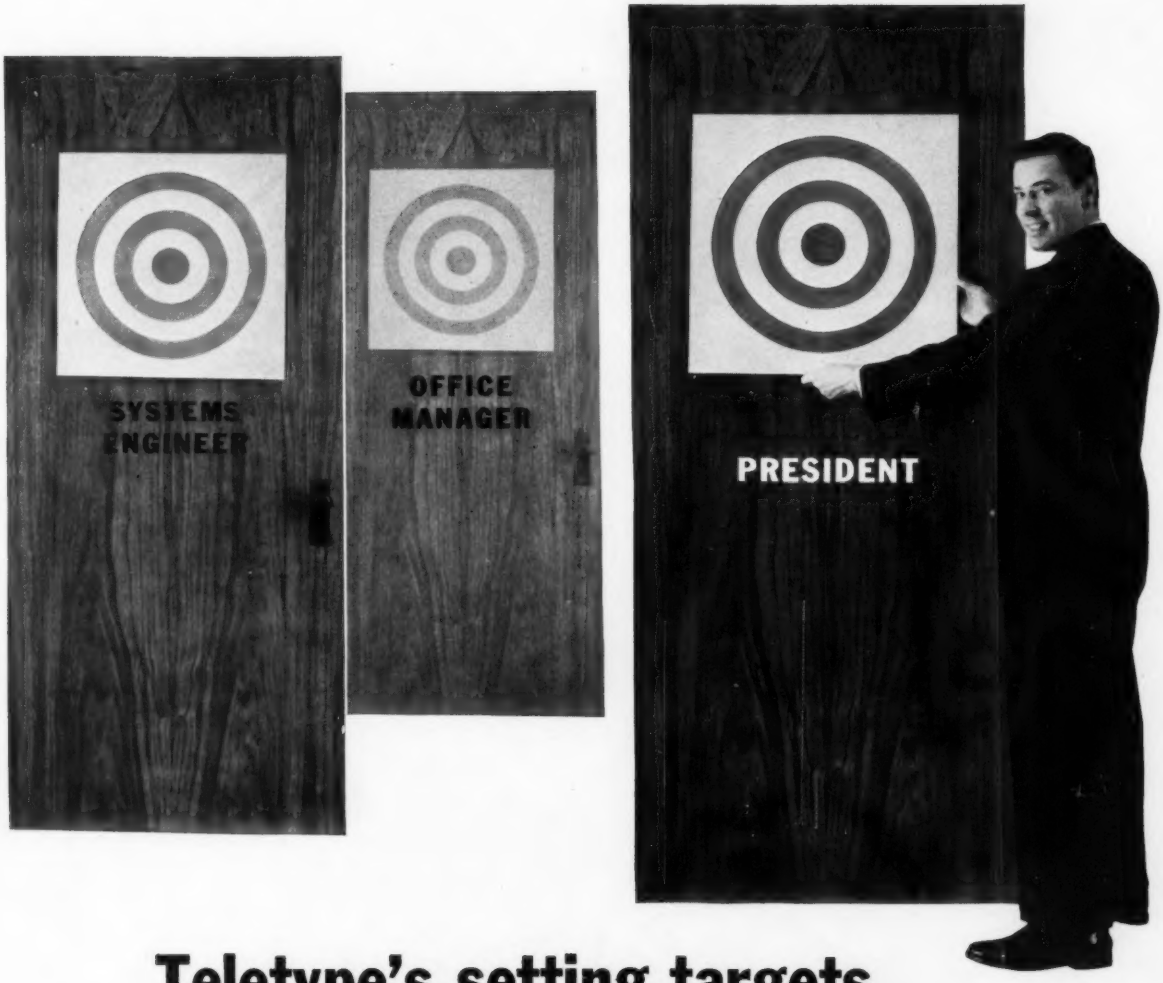
Green Lake Telephone Co.'s rate order included mention of the installation of modern automatic equipment with 2-5 numbering to facilitate tying into the Direct Distance Dialing (DDD) network. The cost of this program, including rehabilitation of outside plant (scheduled for completion about June 1), is about $56,000. At completion, the total rate base will be $86,635, which includes what the commission determined was a fair adjustment to recognize current value, plus an allowance for materials and supplies and cash working capital.

The new rates will produce an estimated $25,545, up from $18,422 under the old; and net income of $5,128, up from $2,748. The approved net is a 5.91 per cent return on the rate base. Present gross rates and approved net rates are:

Business		
One-party	$4.00	$5.75
Two-party	3.50	4.75
Rural multi-party	3.75*	4.25#
Rural multi-party	2.75	—
Residence		
One-party	3.00	4.00
Two-party	2.75	3.25
Four-party	2.25	2.75
Local multi-party	2.00*	—
Rural multi-party	3.00	3.25#
Rural multi-party	2.00	—
Mileage charge for service beyond the Local base rate area:		
Present: Each one-eighth mile or fraction thereof		
Approved: Each one-tenth mile or fraction thereof		
One-party	.30 net	.30 net
Two-party, each subscriber	.20 net	.20 net
Four-party, each subscriber	.15 net	.15 net

* Not to exceed 10-party, semi-selective ringing.
\# Not to exceed 10-party, full-selective ringing.

(Please turn to page 38)



Teletype's setting targets for your shot at extra revenue

A Teletype printer in the office of one of your customers can bring additional revenue.

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Main Target Areas. *Top management* is the major influence in approving big systems using Teletype equipment. Our campaign in two leading management publications will sell multiple use—production planning, accounting, payroll handling, price changes, et al.

Systems engineers carry a lot of weight, too. This group is interested in continuous operations. The round-the-clock dependability of the Teletype printer will be stressed in this campaign.

Office management offers another top target. This is the group that investigates and implements cost-cutting, time-saving systems for conducting more business—better.

Sell a "Complete" Service. A Teletype printer and a telephone are working partners. Teamed, they offer a two-way solution to a major business problem—fast, effective communications.

The Teletype Model 28 printer offers a new "high" in speed, attractiveness, and versatility—a new "low" in maintenance requirements. It can produce extra revenue for *you*.

Teletype Corporation's advertising program for 1958 should be an aid to your salesmen in selling the service. If you would like more information—please write to Teletype Corporation, Dept. 60 D, 4100 Fullerton Ave., Chicago 39, Illinois.

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Now the Martins have

TWO Telephones...

This is the Martin family. And, they're tickled pink with their new extension telephone. Of course, the Martins have always had one telephone in the front hall. But, last week Florence Martin decided to put a second phone in the family room. Here's how it happened...

On Monday, Florence stopped at the telephone company business office to pay her bill. While she was there, she noticed a display of Type 80 desk telephones. The smart, functional design of the instrument caught her eye immediately. And, she learned that the Type 80 is available in a choice of 10 beautiful colors. That night, Florence spoke to her husband about getting an extension. Sam was dubious. But, Florence convinced him. On Tuesday, she called to place her order for a Type 80 in Camellia Pink (to match her drapes). And, just look at the Martins now...

Sam thinks the extension is the best idea he ever had. He likes the lifelike transmission and clarity of the Type 80 (he's making more toll calls than before). Because the handset of the Type 80 is lighter, it's easier for little Kathy and Ricky to use. And, Florence is delighted with the beauty and convenience of her new phone. Result—the Martins are among the most satisfied customers that the telephone company has.

Your community is full of families like the Martins. Families that need extension phones. If you can sell Florence, she'll sell Sam. Use the Type 80 to earn extra revenue and increase good will in your community. To place your order, contact your A.E. salesman or write Automatic Electric Sales Corporation, Northlake, Illinois. Telephone Fillmore 5-7111. In Canada, Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto 16.

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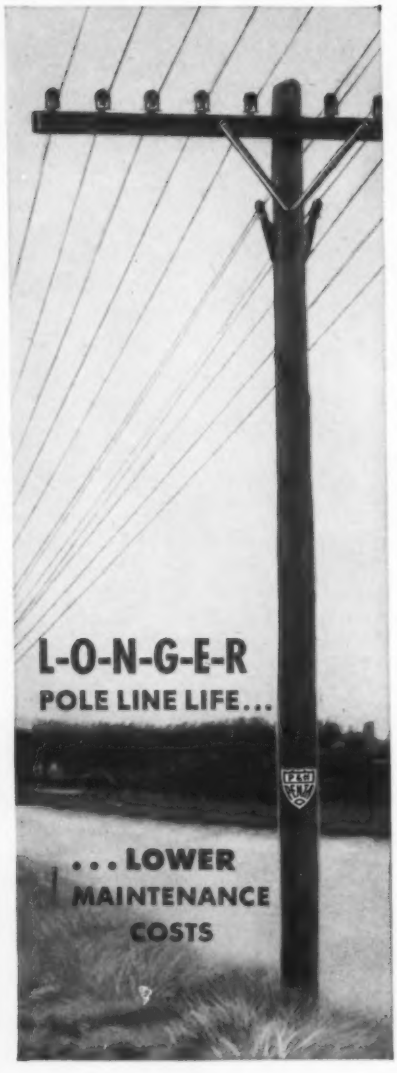

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Green Lake Telephone Co. rates for colored and loudspeaker telephones, and for Electronic Secretary sets are the same as those given above for the Minnesota Central company.

The Green Lake company serves 228 local and 233 rural stations and furnishes switching service for 99 stations.

OK N. C. Company Stock Issue

The Monroe Telephone Co. was authorized by the North Carolina Utilities Commission on Mar. 20 to sell 5,500 shares of its $50 par value common stock and to issue 675 shares for an aggregate par value of $33,750, each stockholder to be offered one share for each two shares held.

Fined in N. Y. Court for Telephoning While Driving

Peter A. Bucky was found guilty on Mar. 19 in New York City's Vehicle Accident Court of talking on the telephone while driving his car and was fined $10 (TELEPHONY, *In the Nation's Capital*, Mar. 15, p. 18).

Mr. Bucky, head of International Medical Research Corp., paid his fine, but said he would appeal to higher courts. The case will be appealed on the evidence alone, Mr. Bucky said. He also remarked that he couldn't see how talking on a mobile telephone could be any more hazardous than the driver who smokes, listens to the radio, or hugs his girl.

Magistrate Neal P. Bottiglieri found Mr. Bucky guilty after Patrolman Sidney Eisenberg testified that he saw Mr. Bucky driving on Feb. 21, and that Mr. Bucky had a telephone in one hand. Having observed this incident Mr. Eisenberg said he gave Mr. Bucky a ticket.

Mr. Bucky testified that he was halted for a traffic light when he picked up the receiver to advise the operator calling his car that he would not be able to receive the call because he was in traffic.

General of Cal. Markets Bonds

General Telephone Co. of California's 20 million dollars worth of 4⅛ per cent bonds will be handled by underwriters led by White, Weld & Co. and Kidder, Peabody & Co. (TELEPHONY, Feb. 22, p. 56). This group took the 30-year bonds with a bid of 99.599, giving the company a borrowing cost of 4.15 per cent.

Money for Expansion

"It is a fact that if industry tomorrow were allowed to double the existing depreciation allowance it still would be wholly inadequate. With the tax load so heavy and depreciation allowance so low, it is little wonder that managements of plants and industries are hard-pressed to know how they can manage to keep their plants modern and efficient. Where, they inquire, is the money to come from? How can they plan for keeping abreast of modern needs without incurrence of a top-heavy debt structure or dilution of their stockholders' equity through the flotation of additional shares."—HENRY H. HEIMANN, *executive vice president, National Association of Credit Men.*

Carolina T&T Rate Raise Hearing Postponed

The twice-postponed hearing on the rate increase requested by the Carolina Telephone & Telegraph Co. of Tarboro has been set for May 6, it was announced on Mar. 27 by the North Carolina Utilities Commission (TELEPHONY, Mar. 15, p. 42).

Carolina T&T filed two requests for rate increases and put the first request into effect pending a commission hearing, thus becoming the first utility in the state to take advantage of a law permitting such action if bonds are posted to insure refunds to customers should the commission later revise the rate schedule downward. This first raise request was for 1.5 million dollars annually.

The second request, also to be considered at the hearing, asked for no specific increase but for whatever the commission felt was justified as a "fair return" on the company's investment.

The commission had been awaiting this report before setting the date for the hearing. The company's subscribers in various eastern North Carolina communities have joined to oppose the increases which the company put into effect in November by posting a $750,000 bond.

General of NW Authorized $371,330 Raise in Idaho

General Telephone Co. of the Northwest, Spokane, Wash., on Mar. 27 secured authorization from the Idaho Public Utilities Commission to increase its gross revenues in Idaho by $371,330.

The commission approved a rate of return in the range of 6.75 per cent to 7 per cent on a rate base of $8,531,053. In order to earn in this range, the company would require net operating income of $597,173, the commission states. Original cost of property less depreciation plus working capital was used by the commission to determine the rate base.

General of the Northwest last gained rate increases in Idaho in September 1952. From then until Sept. 30, 1957 (the date as of which the commission

determined the rate base), the company's average plant investment per telephone increased from $275 to $383.

The company had sought increased gross revenues of $464,490.

OK $1,239,000 Raise in Idaho For Mountain States T&T

Idaho's Public Utilities Commission on Mar. 13 granted Mountain States Telephone & Telegraph Co. rate increases giving the company an additional $1,239,000 annually in gross revenue (TELEPHONY, Oct. 19, p. 39).

Finding that the rate schedule under which the company had been operating was unjust and insufficient, the commission granted all but $188,000 of the company's requested increase.

In its order, the commission held that the company's Idaho rate base should be figured at $34,879,464, representing the original costs of company property used in intrastate service, less depreciation. A reasonable rate of return on this base was found by the commission to be 6.35 per cent.

The commission also recommended that the company could carry a somewhat higher debt ratio than the 27.1 per cent represented by a company witness as the percentage of capital obligations in debt or borrowed money as of last July.

Rulon Larsen, commission utilities director, said at hearings that the company could improve its earnings without boosting rates quite as much if Mountain States' debt ratio were increased to 40 or 45 per cent.

Upon review of the Mountain States' license contract agreement with AT&T, the commission branded as erroneous the method employed in computing the amount properly chargeable as operating expenses arising from the license agreement and said:

"The proper method of disposing of this item in this case is for us to take this into our determination of proper rate of return."

The commission observed that as older, lower-cost plant is replaced by new, high-cost plant "the book investment will eventually equal the present value. It is our opinion that we should not now find as our rate base an amount calculated on present value or reproduction cost new."

The commission holds the view that it should not use present value as a rate base and found no reason to depart from its established method of determining a rate base on a basis of book investment less depreciation.

The commission authorized the company to put the new rates into effect in 30 days.

OK Sale in Ore.; Receive Rate, Local Tax Pleas

Flora, Guy and Richard Wade, and Edith Ann McColm, partners, doing business as the Yamhill & Wapato Telephone Co., on Mar. 24 secured permission from the Oregon Public Utility Commissioner to sell their company to the Sunnyside Telephone Co. The commissioner also:

On Mar. 21 suspended for investigation the application of the Knappa Telephone Co. for authority to increase rates.

On Mar. 24 suspended the request of the Rose Valley Telephone Co., Scappoose, for approval of rate raises.

Also on Mar. 24 suspended the application of the Sunnyside Telephone Co. for authority to pass on to local subscribers any municipal or local taxes imposed on the company.

Two Mutuals Incorporate In Nebraska

Two mutual telephone companies filed articles of incorporation on Mar. 25 with the Nebraska Secretary of State. They are:

Highland Telephone Co., Inc., Culbertson, organized by Will Gohl, Glen Schmelzer, A. J. Altman, Harvey Spickelmier, LeRoy Cook, and Oren Wagner, all of Culbertson, and Hollis McLeland of Hayes Center;

Valley Telephone Co., Inc., Trenton, formed by Fred Bauerle, of Culbertson; and Clyde Matson, Andrew Groathuis, George Hartman and Henry Stecker of Trenton.

Neb. Company Gets Raise; 2nd Asks Stock Sale OK

The Nebraska Railway Commission on Mar. 13 authorized the Hay Springs Telephone Exchange, Inc., to increase its rates.

On May 15 the commission will hear an application by the Pierce Telephone Co., Inc., for authority to sell additional preferred stock.

Wis. Company Asks Raise

A hearing was scheduled for Apr. 3 by the Wisconsin Public Service Commission on the application of the Dickeyville Telephone Corp. for authority to increase rates.

Deceptive Appearance

"We may cover a multitude of sins with the white robe of charity."—BEECHER.

Urge REA Borrowers to Step Up Needed Construction

Rural electric and telephone systems financed by the Rural Electrification Administration have been asked by the U. S. Department of Agriculture to step up needed construction and the purchase of necessary materials and equipment.

The request was contained in a letter from REA Administrator David A. Hamil to the agency's 1,572 electric and telephone borrowers. Mr. Hamil referred to the Mar. 19 letter from President Eisenhower to Secretary of Agriculture Ezra Taft Benson urging that REA borrowers be encouraged to expedite the start of necessary construction.

"The purpose of this request from the President is clear," Mr. Hamil wrote. "It is to stimulate immediate productive employment in a manner that will benefit local communities and the nation. This objective is in keeping with the aims of the rural electrification and telephone programs."

Stating that "Secretary Benson and I wholeheartedly endorse the President's suggestion," Mr. Hamil asked REA borrowers to review, "at the earliest possible date, your engineering plans, construction schedules, and equipment needs to determine the extent to which you feel you can feasibly advance construction starts and placement of orders."

The administrator suggested consideration of such items as: project construction and system improvements; purchase of office, transportation and work equipment; construction of headquarters, warehouse and other facilities; and right-of-way and maintenance work.

"Any speed-up action at this time, in keeping with your needs, will contribute to the economy," Mr. Hamil said.

Obituary

JAMES E. KINGTON, 39, commercial-traffic supervisor for the Southwestern States Telephone Co.'s Louisiana division, Welsh, died on Mar. 10 in Lake Charles, La., after suffering a stroke.

Mr. Kington had been employed by the Southwestern States company since Feb. 1, 1950, serving as group manager at Brownwood, Tex., local manager at Ballinger, Tex., and as commercial-traffic supervisor at Welsh since 1952.

He is survived by his widow, Kathryn; his step-mother, Mrs. Velma Kington, Brownwood; and two brothers, Raymond R. Kington of Brownwood, and Bobby R. Kington of Chicago, Ill.

Kentucky Convention Draws Record Attendance

ATTENDANCE of 316—the largest registration yet—was recorded at the Kentucky Telephone Association convention on Mar. 4 in Lexington.

A. L. Hutchinson, Kentucky Public Service Commission chief of staff, discussed various rules and regulations governing the rendition of telephone service. He said it is the commission's responsibility to see that the rules not only protect and aid telephone companies but also that they are fair and reasonable to the public.

In connection with the commission's approval of rules and regulations pertaining to telephone company operation, Mr. Hutchinson stated:

"Let me assure you that it is not the commission's intent to infringe upon or usurp the prerogatives of management. On the other hand, the primary aim is to supplement and expedite through the medium of proper rules and regulations the orderly expansion of telephone service in Kentucky and at the same time insure with a minimum of red tape the maximum protection to be afforded by regulation to all parties concerned — that is, the utility and its customers.

"I believe we will all agree that it would be impractical, if not impossible, to design a set of rules that would cover all situations. But certainly the adoption of proper and practical yardsticks would do away with the necessity of many formal proceedings by setting up the road rules under which the utility would be expected and required to meet certain standards of service and at the same time, although in the negative, pointing out the customers' responsibility and defining the area beyond which his demands upon the utility might be considered unreasonable, or at least until such time as the case could be reviewed in the light of the particular circumstances that surround it."

Mr. Hutchinson added, "We believe that you will find these additional standards of operation, when they are adopted, will make both our jobs easier, leaving us with more free time to study the many complex problems which, by their very nature, cannot be solved through the expediency of a rule or regulation.

"If this is accomplished and at the same time the equities of all parties concerned are preserved, then we are well on our way toward the objective which I am sure is your aim and ours —an adequate service to, and friendly relations with, the public, which, after all, we both serve."

Henry G. Turner, of Atlanta, Ga., vice president—merchandising, Southern Bell Telephone & Telegraph Co., presented a talk titled: "Marketing—Telephone Industry." He told of a survey Southern Bell had conducted which showed that 26 per cent of the company's subscribers interviewed in Kentucky consider the telephone as merely a convenience. He urged that telephone

(Please turn to page 66)

H. J. Wright of Elizabethtown, outgoing president, reports to the convention.

Newly elected Kentucky Telephone Association officers are (left to right): H. J. Huether Jr. of Lexington, President; P. H. McCrory of Louisville, vice president; L. T. Utz of Florence, vice president, and J. A. Reitze, secretary-treasurer.

LEFT PHOTO: Discussing industry matters between sessions of the Kentucky convention, are (left to right): H. J. Huether Jr., president, General Telephone Co. of Kentucky; Hugh Barnhart, president, Rochester (Ind.) Telephone Co. and vice president of USITA; and Henry G. Turner of Atlanta, Ga., vice president, Southern Bell Telephone & Telegraph Co. RIGHT: Group photographed at the banquet.

ONE-MAN COMMUNICATION CENTER

With the portable, lightweight Kleinschmidt field teletypewriter, remote positions keep in two-way printed communication with distant headquarters.

Quickly set up for transmission and reception of information, the Kleinschmidt teletypewriter instantly establishes accurate, printed communications between outlying areas and headquarters. With this unit, developed in cooperation with the U. S. Army Signal Corps, two-way teleprinted communications can be established in minutes. Identical printed originals are in the hands of sender and recipient simultaneously.

Since the early 1900's, Kleinschmidt has devoted its efforts to the constant development and wider utilization of teleprinted communications equipment. Credited with an imposing list of "firsts," Kleinschmidt—now a member of the Smith-Corona organization—continues its never-ending research to broaden the scope of teleprinted communications in every field.

Pioneer in teleprinted communications equipment

KLEINSCHMIDT LABORATORIES, INC.

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Britain and Canada Plan Transatlantic Cable

A new transatlantic telephone cable is to be laid between the west coast of Scotland and Newfoundland, at a cost of about 25.2 million dollars, it was announced on Mar. 12 by the British Information Services. A special new lightweight type of deep-sea submarine telephone cable, developed by British research, will be used for this transatlantic telephone cable connecting the United Kingdom and Canada, the first one sponsored by Commonwealth countries alone.

Britain's H.M.T.S. Monarch, largest cable ship in the world, which will lay the cable, has just returned to London after completing a month's laying trials. Experimental two-way repeaters, used to amplify signals, were spliced to special lengths of cable at depths of about 2,700 fathoms (16,000 feet) in the North Atlantic, without stopping the ship.

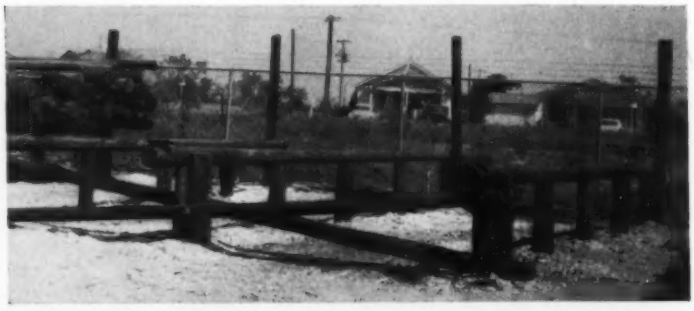
The new cable, christened "Cantat" (Canadian Transatlantic Telephone) will provide for estimated telephone and telegraph requirements between Canada and Europe for 20 years ahead. It will be available for service by the middle of 1961. About 2,100 nautical miles in length, it will be engineered to provide at least 60 telephone circuits, any of which could be used for 40 or more telegraph channels if necessary.

The British General Post Office is responsible for designing and engineering the system as a whole, but it will be owned jointly by Canadian Overseas Telecommunications Corp. and Cable & Wireless Ltd., and both firms will be responsible for maintenance.

The Canadian Oveaseas Telecommunications Corp. plans to connect the terminal station in Newfoundland with the mainland of Canada by a further submarine cable landing on the south coast of the Gulf of St. Lawrence. From there to Montreal, connection will probably be by microwave radio relay. From Scotland, the system will be carried by underground cable across the border to the international telephone exchange in London.

The present transatlantic cable, which has its terminal at Gallanoch, near Oban, Scotland, was a joint American-British-Canadian enterprise. It provides 36 speech channels, six to Canada and the remainder to the United States, and was opened for service in September 1956. A second similar cable, also having a capacity of 36 circuits, is due to be laid by H.M.T.S. Monarch between France and Canada in 1959 to link the United States with the mainland of Europe (TELEPHONY, Oct. 5, 1957, p. 42).

Racks Protect Poles



The reserve supply of telephone poles in the central division of the General Telephone Co. of the Southwest will be stored some 3½ feet off the ground from now on, as result of the new racks recently constructed.

Four new racks serve a three-fold purpose: They keep poles off the ground, they facilitate loading and unloading, and they make counting of poles easier.

Original in design and simple in construction, the heavy-duty racks are built of used telephone poles. Two racks are constructed to hold 25-foot and 30-foot poles; another, to hold 18- and 20-foot poles; and another, to hold 35-, 40-, and 45-foot poles.

The racks were designed by J. M. Walter, division buildings and supplies supervisor, and J. P. Willows, division plant superintendent. Construction was done by R. P. Snyder, construction foreman, and linemen J. R. Slough and Thomas Johnston.

The upper photo shows a side view of rack. In lower photo, left to right, are: J. M. Walter, Mr. Snyder, Mr. Slough, and Mr. Johnston standing beside racks.

"Cantat" will differ from earlier cable systems in that a single cable will be used to carry speech in both directions. This represents a considerable advance in technique over so great a distance. The research branch of Britain's General Post Office Engineering Department developed the cheaper lightweight cable which makes use of aluminum and polyethylene, and does away with wastage of steel. The new cable has no external armored wire. The strength comes from the center, which consists of a non-twisting steel rope.

Despite the enormous capital expenditure necessary to achieve great improvements in efficiency, it is still possible to make a three-minute telephone call from anywhere in Britain to anywhere in the United States and Canada for $8.40 which is considerably cheaper than before the last war. There are also lower-rate calls from Britain between 10:00 p.m. and 10:00 a.m. Greenwich Mean Time.

Worthwhile Companion

"They are never alone that are accompanied with noble thoughts."—SIR PHILIP SIDNEY.

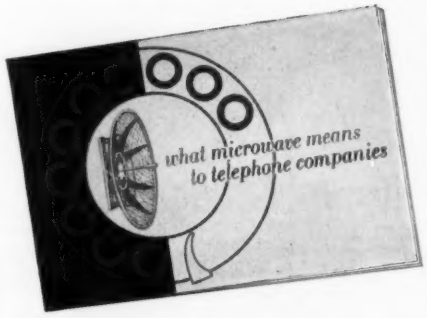
Rewards Of Chance

"You have greatly ventured, but all must do so who would greatly win."—BYRON.

Here's helpful information about **MICROWAVE**

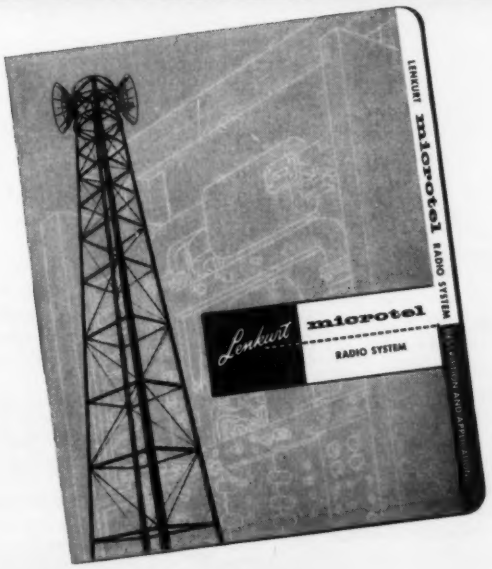
What microwave means to telephone companies

This illustrated booklet explains how telephone companies can obtain additional toll circuits at low cost with microwave. Explains that microwave can be installed quickly, at low cost . . . that it's easy to maintain, simple to expand, solves difficult terrain problems and can withstand severe weather conditions. *Write for booklet 0-946.*



microtel fact file

Plain facts about Type 74A MICROTEL—the new Lenkurt 6,000 MC microwave equipment designed for high frequency transmission of telephone, telegraph, teletype, telemetering, facsimile, supervisory and remote control information. A basic MICROTEL terminal will fill the needs for only a few circuits, or for a high density network requiring as many as 240 channels. *Write for file A1-274.*



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AUTOMATIC ELECTRIC

A member of the General Telephone System—One of America's great communications systems

GENERAL TELEPHONE SYSTEM

ECONOMIC SELECTION STUDIES

Concluded from page 23

money is 6 per cent, state property tax 1.90 per cent, federal income tax 3.55 per cent, maintenance $1,755?

The solution for this case is exactly the same as for Case 8 except the life extends to the end of the study period, instead of to some year before the end of the period.

Diagram for Case 9.

Depreciation = first cost — net salvage = $13,500 — $2,500 = $11,000

From *Table 4*, factor for 10 years — factor for three years = 7.360 — 2.673 = 4.687

See *Table 24*.

The comments at the end of Paragraph 6.545 concerning alternate methods of handling depreciation also apply to this example for a removal at the 10th year instead of the seventh.

6.547 *Case 10. Deferred Plant Retained Beyond the End of the Study Period.*

Equipment costing $13,500 is to be installed three years from now. For a study period covering 10 years from today, what is the present worth of the charges, if the cost of money is 6 per cent, state property tax 1.90 per cent, federal income tax 3.55 per cent, annuity depreciation 2.50 per cent, maintenance $1,755 per year?

In this case, the proposed equipment is not to be installed immediately, and after it is installed, it will be in plant for an unstated time beyond the date covered by the period of the study. Since the plant is not to be removed, the depreciation in this case is expressed as an annual charge, not as a lump sum occurring when the equipment is retired.

Diagram for Case 10.

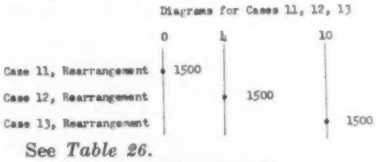
Factor for 10 years — factor for 5 years = 7.360 — 4.212 = 3.148 *(Table 4)*

See *Table 25*.

6.548 *Cases 11, 12, 13. Non-recurring Expense Items.*

In addition to other items being included in a study, several non-recurring expenses are necessary. An equipment rearrangement of $1,500 is involved immediately, another in four years, and a third at the end of the 10-year study period. What is the present worth of each of these items, if the cost of money is 6 per cent?

Diagram for Cases 11, 12, 13



See *Table 26*.

(To Be Continued)

ITEM	INVESTMENT	ANNUAL CHARGES		PRESENT WORTH			
		PER CENT	AMOUNT	PERIOD	FACTOR	TABLE	AMOUNT
Equipment	13,500	13.95	1,883				
Misc. on equipt.			1,755				
			3,638	3-10	4.687	11	17,051
TOTAL							
EQUATED ANNUAL CHARGE			3,638				

TYPE OF PLANT	ANNUAL CHARGE PERCENTAGES
	Equipt.
C OF M	6.00
PROPERTY TAX	1.90
INCOME TAX	3.55
DEPRECIATION	2.50
MAINTENANCE	$1,755
TOTAL %	13.95

Table 25

ITEM	INVESTMENT	ANNUAL CHARGES		PRESENT WORTH			
		PER CENT	AMOUNT	PERIOD	FACTOR	TABLE	AMOUNT
Rearrangement 1500				now	1.0	8	1,500
Rearrangement 1500				4	.792	8	1,188
Rearrangement 1500				10	.558	8	837
TOTAL							
EQUATED ANNUAL CHARGE							

TYPE OF PLANT	ANNUAL CHARGE PERCENTAGES
C OF M	
PROPERTY TAX	
INCOME TAX	
DEPRECIATION	
MAINTENANCE	
TOTAL %	

Table 26

2 General of Cal. Men Transferred to New York

Two General Telephone Co. of California employes, B. J. Lovitt and Leo A. Birch, were recently promoted and transferred to positions with the General Telephone Service Corp. in New York, according to Dean M. Barnes, operating vice president for the company.

Mr. Lovitt, former construction program engineer-senior supervising in the general engineering department, on Mar. 1 assumed the newly created position of exchange plant engineer in New York. Also on Mar. 1, Leo A. Birch, former northern division traffic superintendent, assumed his new position as traffic administrator.

A General Telephone employe since 1949, Mr. Lovitt has held varied positions in the engineering department. He attended high school and college in Santa Monica, Cal.

Mr. Birch joined General in 1950 as a storeman in Santa Maria. He later held numerous positions in the company's general traffic department in Santa Monica before assuming his northern division assignment.

G. W. Wopat has assumed Mr. Lovitt's position as construction program engineer-senior supervising and James M. Jordan, former northern division traffic coordinator, has replaced Mr. Birch as traffic superintendent for that division.

Lincoln (Neb.) T&T Plans For DDD at Auburn

Construction was started on Mar. 17 on the new Auburn telephone building of the Lincoln (Neb.) Telephone & Telegraph Co. The building is scheduled for completion this fall after which equipment will be installed for a new $435,000 system for local and long distance dialing. Initially, customers will be able to dial station-to-station long distance calls direct to telephones in 77 automatic exchanges in southeast Nebraska.

The new system will serve some 1,850 telephones at Auburn. It will also provide Direct Distance Dialing (DDD) facilities for customers at Brock, Johnson, Peru, Brownville, and Nemaha.

Harold E. Cain Appointed Supervisor Of Fla. Company

Harold E. Cain, former treasurer and commercial superintendent of the Warren (O.) Telephone Co. has been appointed general commercial supervisor of the Inter County Telephone & Telegraph Co., Ft. Myers, Fla.

Mr. Cain was feted at a dinner on Mar. 22 at which a "This Is Your Life" program was given and he was presented with a gold engraved watch and a cash gift by his fellow employes.

Mr. Cain started with the Warren company as an accountant in July 1947. He became auditor for the company in 1949, treasurer in August 1955 and commercial superintendent in Dec. 1955.

BICC execute Major Telecommunication Projects ANYWHERE IN THE WORLD

Consult BICC about the Planning Manufacture and Installation of Telecommunication Projects.

We have had long experience in this kind of work in many parts of the World. A few of our recent contracts are briefly described below.

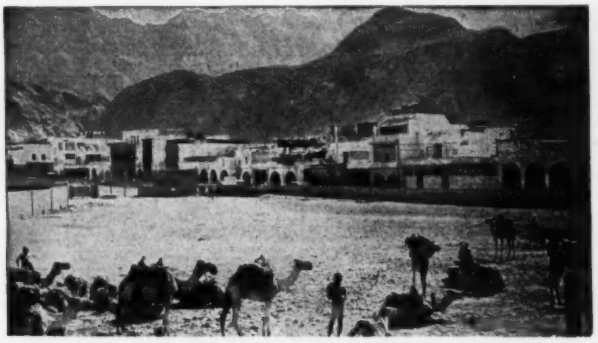
The following types of BICC Cable are in continuous manufacture for telephone administrations in many countries: coaxial and balanced pair cables for carrier working, long-distance audio cables, paper or polythene insulated exchange-area distribution cables.

We shall be pleased to give you further information from our nearest Branch Office or from our Headquarters in London.

AUSTRALIA *Electrification of the New South Wales Railway Western Line has necessitated a completely new track-side cable scheme covering the 34 miles from Sydney to Penrith. The main cable comprises 6 pairs for 24 channel carrier working and 60 audio pairs for local telephone and control purposes. Many of the audio pairs are terminated at railway stations, signal huts, power substations, etc., in order to provide local facilities. The installation was undertaken by BIC Construction Co. for the N.S.W. Railways Department, the cable being manufactured by BICC.*

NEW ZEALAND *BICC have supplied a long-distance cable between Auckland and Hamilton for the New Zealand Post and Telegraph Department. BIC Construction Co. supervised the installation and undertook the progress and transmission testing. The cable consists of 4 coaxial tubes to provide long-distance carrier or television circuits, together with a surrounding layer of 54 audio pairs for intermediate local circuits. The pairs are loaded. The cable is buried direct in the ground for most of its eighty-mile route, except when passing through towns where it is laid in ducts.*

VENEZUELA *BIC Construction Co. have undertaken the jointing and supervision of installation of a 448 pair 20 lb. long-distance audio cable to improve the telephone service between Caracas and Maiquetia. With a route length of approximately seventeen miles, the cable runs wholly in ducts along the side of a newly-constructed auto-road linking the capital town of Caracas with the coast. This contract has been undertaken for the Compania Anonima Nacional Telefonos de Venezuela, the cable being manufactured by BICC.*

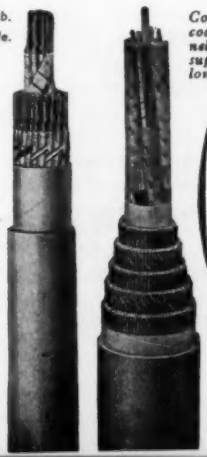


ADEN *To extend existing facilities and to cater for the Colony's growth, a new distribution network has been installed comprising approximately 44 miles of BICC cables specially protected against soil corrosion.*
The new network provides an increase of 3,000 lines and consists of paper-insulated local distribution cables ranging from 15 to 200 pairs, the larger sizes being of the unit twin type. A short balanced and loaded audio cable was also installed to link the Town with the new refinery site at Little Aden. This contract was undertaken for the Aden Posts and Telegraph Department.

Left: a BICC jointer at work on a coaxial cable, cutting the tubes ready for jointing. Two typical cables for carrier working are illustrated on right.

BICC manufacture every type of telecommunication cable and undertake their installation — anywhere.

24 channel 24 pair 40 lb. carrier telephone cable.



Composite cable with 4 coaxial tubes for 960-channel or television, with 18 supervisory pairs and 390 long-distance audio pairs.

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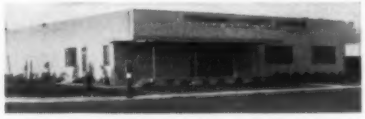
Sitting pretty in the old Bay City

You can't blame Ken Johnson for looking self-satisfied as he sits so prettily atop his unusual perch—and why not—for he now supervises the handling of your supply needs from a brand-new, efficient warehouse amply stocked with construction materials and supplies to serve your complete telephony requirements.

Ken knows that in California (and in other communities from coast to coast) you're enjoying the satisfaction that results from quality supplies . . . meticulous attention to details . . . speedy handling of your orders . . . long experience in meeting your needs and in selecting the right suppliers.

And here's a big extra: we invest a very real part of what we earn from your orders in full-time research to bring you new and better telephone equipment.

That's why *you* are sitting pretty when you order construction and maintenance supplies from the Stromberg-Carlson branch office and warehouse in your area.



In the San Francisco area our Sales Office and Warehouse is located at this address: 1805 Rollins Road, Burlingame, Calif. Telephone Number—OXford 7-3630.

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Electronic and communication products for home, industry and defense

IN THE NATION'S CAPITAL

Concluded from page 18

rate cases was duplicating the function of regulatory commissions, such as the FCC. The House committee report quoted a reply by FCC Commissioner Rosel H. Hyde, who testified before the committee, "I believe that they (GSA) have a duty to watch out for their interests from their viewpoint and that it is not a duplication of our work."

Relocation Progress

During its consideration of appropriations for the Federal Aid Highway Construction bill, the U. S. Senate, on Mar. 26, beat back a stubborn effort to cut down the percentage of reimbursement allowed for the expense of relocation of utility facilities. Under the present law, the federal government may allow up to 90 per cent of the cost of relocation of such facilities due to interstate federal aid highway construction, provided state law permits such reimbursement. But, the Senate Public Works Committee brought in, along with the rest of the federal aid highway construction appropriations bill, an amendment which would have cut the benefits to 70 per cent. Upon a roll call vote, the Senate agreed to a compromise worked out by Senators Hruska (R., Neb.) and Kerr (D., Okla.) restoring the benefits to 90 per cent. This amendment was approved by the narrow margin of 47 to 38. The following is the roll call vote:

Yeas—47

Allot, Colorado
Anderson, New Mexico
Barrett, Woming
Beall, Maryland
Bennett, Utah
Bible, Nevada
Bricker, Ohio
Butler, Maryland
Byrd, Virginia
Carlson, Kansas
Case, New Jersey
Curtis, Kansas
Dworshak, Idaho
Ervin, North Carolina
Frear, Delaware
Goldwater, Arizona
Hayden, Arizona
Hickenlooper, Iowa
Hoblitzell, West Virginia
Holland, Florida
Hruska, Nebraska
Ives, New York
Johnson, Texas
Johnston, South Carolina
Kerr, Oklahoma
Knowland, California
Kuchel, California
Malone, Nevada
Mansfield, Montana
Martin, Iowa
Martin, Pennsylvania
McClellan, Arkansas
Mundt, South Dakota
Murray, Montana
Potter, Michigan
Revercomb, West Virginia
Robertson, Virginia
Saltonstall, Massachusetts
Schoeppel, Kansas
Scott, North Carolina
Smathers, Florida
Talmadge, Georgia
Thurmond, South Carolina
Thye, Minnesota
Watkins, Utah
Williams, Delaware
Young, S. Dakota

Nays—38

Aiken, Vermont
Bush, Connecticut
Carroll, Colorado
Case, South Dakota
Church, Idaho
Clark, Pennsylvania
Cooper, Kentucky
Cotton, New Hampshire
Douglas, Illinois
Eastland, Mississippi
Flanders, Vermont
Fulbright, Arkansas
Gore, Tennessee
Green, Rhode Island
Hennings, Maryland
Hill, Alabama
Jackson, Washington
Javits, New York
Kefauver, Tennessee
Kennedy, Massachusetts
Langer, North Dakota
Lausche, Ohio
Magnuson, Washington
McNamara, Michigan
Morse, Oregon
Morton, Kentucky
Neuberger, Oregon
Pastore, Rhode Island
Payne, Maine
Proxmire, Wisconsin
Purtell, Connecticut
Russell, Georgia
Smith, Maine
Sparkman, Alabama
Stennis, Mississippi
Symington, Missouri
Wiley, Wisconsin
Yarborough, Texas

Meanwhile, two more states have passed relocation laws, Virginia and New York. In New York, Governor Harriman vetoed a similar bill last year. Unless the New York governor repeats this performance there will be 17 states where the laws permit the reimbursement of public utilities for relocation expenses. These are Idaho, Delaware, Florida, Illinois, Maine, Minnesota, Montana, Nebraska, New York, North Dakota, Connecticut, Oklahoma, Tennessee, Utah, and Virginia.

To Keep Us Free

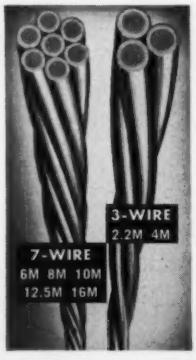
"When governments say things like: 'You must not produce that; you must produce this.' 'We will compel you to save more and to spend less.' 'We will tax and take away the great part of any extra earnings you may make as a result of your extra work, ability, or enterprise,' then free enterprise is in danger."—C. D. KEMP, *Director, Institute of Public Affairs, Victoria, Australia.*

You'll be sitting pretty with Copperweld

Two major features of the new Copperweld Type M Guy Strand will sit very well with you: *low cost* and *convenience.*

Thanks to research and new production techniques, Copperweld keeps your initial cost low. And there's practically no maintenance for you to worry about.

As for convenience, Type M Guy Strand is pliable and easy to handle. You can bend, serve, mouse or clamp it. The thick, ductile copper sheath on each wire will not crack, flake or peel because it's inseparably molten-welded to the steel core.



Type M Guy Strand is available in 2.2M, 4M, 6M, 8M, 10M, 12.5M, 16M strengths.

When you order guy strand from the Stromberg-Carlson Branch Office and Warehouse in your area, specify Type M Guy Strand by Copperweld.

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NOW AVAILABLE *at nominal cost*

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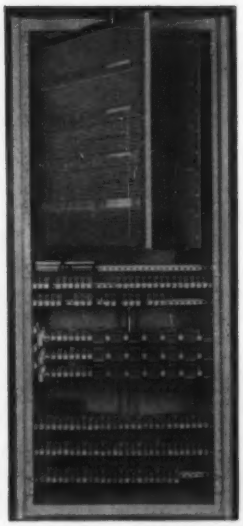

Cabinet 84"x36"x12
Capacity 30,000
Stations, TPL or TPS
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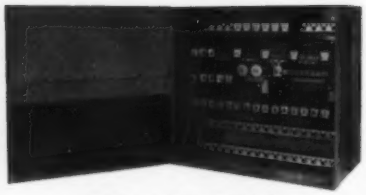

Cabinet 19"x17"x8"
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SELECTIVE (TWO-WAY) INTERCEPT is available to route calls for changed numbers and disconnects to operator, others to recorder, or other variations as desired. Advanced technique of printed circuitry is used in this equipment. The Magnetic Impulse Counter is the basic unit of the computer register circuits, supported by standard telephone relay apparatus of recognized manufacture.

Other UNIVERSAL Telephone Equipment: DIGIT ABSORBER for 2-5 Numbering Code-to-Selective RINGING CONVERTER

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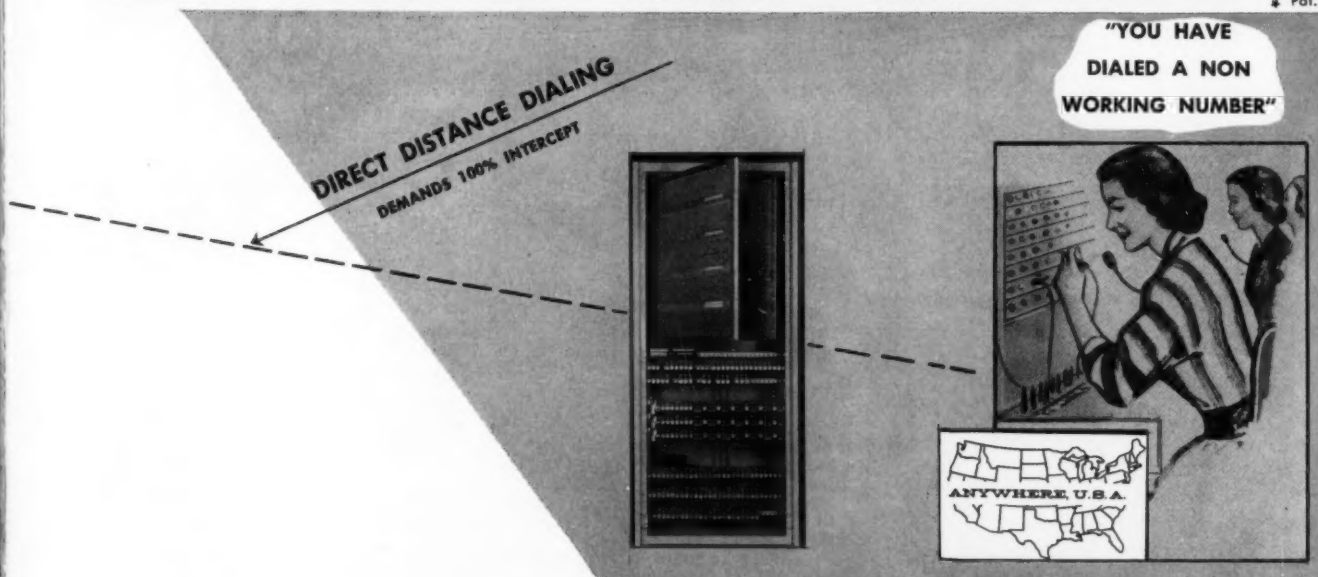
* Pat. Pend



Buy the ultimate requirements in intercept equipment. Not "merely adequate" . . . not 20% . . . not 99% . . . but 100% intercept is the ultimate requirement for direct distance dialing. Universal Computer Intercept offers 100% intercept at nominal cost, compatible with any make switchboard, and easily inserted anywhere in the dialing train. The unit is completely factory wired and may be installed by regular maintenance personnel. Simplicity of design lends to minimum maintenance requirements.

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  Your TPL will have the effective features of TPS intercept *to add to* your toll settlement.
- ✓ **Increased Revenue through Increased Trunk Usage Time.**
  Reduce the repeated attempts on long-haul toll calls that keep valuable toll switching apparatus tied up.
- ✓ **Savings in Time and Material in Adding Intercept Service to your Operation.**
- ✓ **Intangible Advantages.**
  - **Immediate intercept of calls to busy lines for non-working or changed numbers on these lines.**
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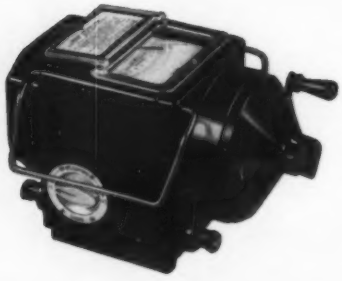

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are the most generally accepted devices in the world for detecting incipient weaknesses in the insulation of nearly all types of electrical equipment.

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BULLETIN 21-45-T

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Frequency measurements are made easy with this miniature portable Frahm Resonant Reed Frequency Meter. Vibrating reed tips form a pulsating pattern that makes it easy to read alternating current frequency from 15 to 1500 cycles per second.

Meter is applicable to pulsating or interrupted D-C as well as A-C supply circuits. Sturdy — no delicate pivots, jewels or moving parts. Remains relatively unaffected by external fields and is independent of load, power factor or phase shifts in supply circuit. Available in switchboard, miniature and portable types. Model illustrated is used for checking bell-ringers.

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SMALL COMPANIES

Continued from page 20

repairman as to how a new development should be served, which is the case in many small companies, is not a desirable procedure. The plan would put a heavier work load on those in management who are responsible for advance planning, but the results will more than justify the increased load.

Under average operating conditions, the data shown on the cable record illustrated in *Fig. 8* in Part 9 of this series (TELEPHONY, Dec. 28, 1957) will, if the daily troubles are recorded as was suggested therein, give a fairly accurate résumé of the outside maintenance picture for both cable and the open wire. This record, along with the individual subscriber record card and the associated line card, will clearly indicate if additional maintenance work should be done to improve the operating condition of any line or cable.

The amount of central office maintenance performed, either preventive or to clear trouble, can be limited to what is absolutely necessary, or it can be extended to a point where its cost exceeds the value derived from the work. In some cases, this actually is the case and is due largely to the temperament of the individual employes involved. One man may not care for inside work, but the requirements of his job make it necessary that he do both inside and outside maintenance, so there is a tendency for him to show a lesser amount of attention to the central office equipment.

The converse of this situation also is in existence, but it is not as common, but the effect on station troubles is the same. In the larger company, where new employes are hired to be trained solely for central office work, the problem is of little consequence, but in the smaller company where the employe is usually hired for outside work and later, possibly within a year or two, he is introduced to central office work, a perplexing problem could result. Insistence on the part of management that the employe assume central office duties, even though he is not physically and mentally adapted to that work will not be conducive to the rendition of good telephone service, especially in the smaller exchange being operated by only a few men. An intensive training program in central office maintenance, if given to the individual, may remedy the condition, but it can never be entirely successful if the individual does not have a will to do that type of work.

Normal switchboard trouble is more

ESCO RINGING EQUIPMENT

MEMBER

ADDITIONAL ESCO FEATURES (details in future ads pictured on the dial) — further explain why Esco components are included in installations of prominent suppliers like Automatic Electric Co., Federal Telephone and Radio Corp., Kellogg Switchboard and Supply Co., Leich Sales Corp., and Stromberg-Carlson Co.

permanent, precise alignment gives a quieter, smoother drive

The whispering-soft, velvet-smooth operation of an ESCO ringing assembly comes from its unique drive design. To begin with, motors and driven units are factory mounted in precise alignment. They never need to be touched again, even to change belts. An idler pulley provides initial belt tension. To change belts, it is only necessary to loosen the idler pulley, remove old belts from the sheaves, and replace with new ones. By keeping accurate alignment, belts last longer.

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But care and attention to important details like this is just one of many reasons why ESCO is preferred by engineers, suppliers, and users alike. The full facts are yours for the asking in our new brochure, ESCO RINGING EQUPMENT. Send for it today.

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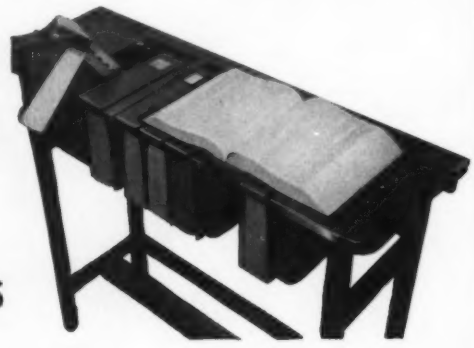

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easily detected in a manual exchange than in an automatic exchange, but, in either case, periodic routining practices will be of considerable value in reducing subscriber complaints. The detected trouble may be due to an improperly soldered jumper wire—or for that matter, one which was not soldered—or the delicate tensioning of a contact spring, but the remedy here is to set up a program which will provide normal routining of all equipment, including the ringing equipment. Waiting for a rainy day, or cold weather, when outside work cannot be done, to perform central office maintenance work will not improve the picture. As in all other plant, any piece of central office equipment should be replaced when it is worn out, regardless of whether it is an expensive strip of jacks, a key assembly unit, or a frayed cord. Automatic boards also can be routined on the same basis and strict adherence to a scheduled plan will go a long way in detecting trouble, and such a plan is more of a must in automatic offices because of the absence of the assistance normally supplied by the operating force in a manual office.

In common battery exchanges regular inspection and maintenance of storage batteries are essential for top operating performance. Gravity readings at specified intervals will show whether or not they are operating efficiently. The battery manufacturers' field representatives usually maintain an additional check, so that actual battery failure is not too much of a concern. However, the operation of charging equipment and emergency generator units should be given full consideration. Maintaining spare parts in stock for the charging unit will readily permit replacement of defective parts without service interruption.

Emergency generator units should be tested weekly to see that they are in good operating condition. In those cases where an emergency plant is not a part of the central office equipment, it would be advisable to consider the purchase of a portable unit to insure the continuation of service in the event of a commercial power failure.

Some automatic boards are not equipped with a frequency meter to check the ringing frequency and the check must be made with telephone ringer units. Under normal conditions, this will be sufficient, but if a portable frequency meter is available periodic checks should be made to insure good operation on all lines.

Telephone plant such as buildings, automotive and power equipment, along with tools, also require detailed routine maintenance programs in order to in-

sure safe and efficient working conditions for plant employes. The plan should provide for checking for lost, stolen and broken tools.

The costs of operating and maintaining company-owned vehicles also should demand the attention of management. The way vehicles are operated influences these costs perhaps more than any other factor. Normally, three types of drivers are encountered.

First, we have the employe who is very careful in operating his vehicle at all times and the operating and maintenance cost is below average. Secondly, there is the employe who is just naturally rough on anything he take hold of and, therefore, the cost of operating his vehicle is unusually high. Thirdly, there is the employe who will operate his vehicle with above average efficiency during normal times, but who throws all "caution to the wind" when he is rushed. Operating costs tend to be on the high side in this case.

Management should take steps to see that the company's vehicles are operated on an efficient basis so the cost of keeping them rolling will be maintained at the lowest possible level.

All of the costs of operating and maintaining plant mentioned above must be taken from the revenue obtained from the company's customers, and it is the duty of management to see that all employes are impressed with this fact and that high operating and maintenance costs not only affect the financial status of the company but that of every person on the payroll as well.

G. J. Cox, formerly general commercial supervisor of the General Telephone Co. of Michigan, has been appointed director of marketing and merchandising for the company. This is a new general staff position according to President T. A. Saunders.

GREATER ALARM PENETRATION FOR ALL EXPOSED AND NOISY LOCATIONS
KELLOGG Loud Ringing Bell
For schools, manufacturing plants, boiler plants — any exposed or noisy location requiring a loud warning signal — the new Kellogg Code 75 Loud Ringing Bell offers greater indoor or outdoor alarm penetration for necessary attention.
Tested and proved under all line conditions, the Kellogg Loud Ringing Bell is fully compatible to all types of circuits. It can be used on the same circuits with high impedance ringers without creating line unbalance, and is available in harmonic, syncomonic, and desomonic frequencies, as well as superimposed straight-line ringers for every type of application. The entire unit is protected by an attractive rust-proof and weatherproof cover and can be easily mounted anywhere with only two mounting screws.
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— because PORTER COHARDITE-INSULATED ELECTRIC WIRE CUTTERS are built to meet the exacting safety and work-speed demands of Utility men. Center cut jaws easily cut insulated soft to medium hard wires, copper wire and medium hard steel wires up to ½". Rugged, hot-molded, special semi-hard rubber (Cohardite) handles, assure top toughness, high dielectric strength — and resist oxidation and chemicals. Each tool factory-tested to 20,000 volts.

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STEEL CABLE CUTTER!

Shear-action cutter — for general cutting of all soft or hard steel cable or wire rope up to ¾". Notched jaws lock cable during cut, minimizing deforming.

For COPPER and ALUMINUM CABLE
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SPECIAL SHEAR CABLE CUTTER

Designed for cutting soft, non-steel power cables, insulated or not, up to 1⅜" O.D. Jaws pass each other for clean cutting. A must for every efficient utility crew.

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Looking over one of the entries in the 1958 Chicago Public Schools' Student Science Fair are (left to right) W. V. Kahler, president of Illinois Bell Telephone Co. and chairman of the fair's business-education advisory committee; Gerald J. O'Connor, Farragut High School science teacher and chairman of the fair's executive committee; and Adrian Ender, 11, of Chicago, a seventh grade student who has entered a radio crystal set in the exhibition. Chicago industry is joining the board of education and teachers in taking an active part in promoting the participation of the young scientists in the fair.

Kahler of Illinois Bell Aids Student Science Fair

William V. Kahler, president of Illinois Bell Telephone Co., and a moving force in getting Chicago industry to join forces with the board of education and teachers to "make a place in the sun" for the city's young scientists of tomorrow, has been named chairman of the business-education advisory committee for the 1958 eighth annual Chicago Public Schools' Student Science Fair.

Spurred by the need for able scientists to keep pace with Russia's strides, top Chicago industrialists are pledging money and manpower to strengthen the student science fair as a showcase for the efforts of scientifically-minded Chicago youngsters.

"In this new age of earth satellites and guided missiles, science is receiving more attention on all sides than in any previous period in history," Mr. Kahler says. "We must recognize without delay the needs of business for people trained in science—but even more—the nation's urgent need for teachers if we are to produce more and better-trained scientists and engineers."

The science fair organized by the Chicago high school science teachers in 1951 and incorporated in 1955, is a series of exhibitions, first in local schools, then in 16 district science fairs and finally a display of youthful talents at the Museum of Science & Industry on Apr. 10-13.

The winner in the communications exhibits will be given an all-expense trip by Illinois Bell to the Bell Telephone Laboratories in New York and Murray Hill, N. J. The winner will be accompanied by his teacher whose expenses also will be paid.

Mr. Kahler praised the science teachers for their work during the past seven years of the fairs and emphasized that any help industry can give them should be channeled through the present science fair organization.

Dr. Benjamin C. Willis, general superintendent of Chicago public schools, stated: "The science fair is an acknowledgement of the importance of science in improving public welfare, promoting better living and encouraging and developing American scientists who will carry on the traditions of the American way of life."

Citing the need for "a new level of financial support, more manpower and leadership and new ideas from everyone," Kahler listed these objectives for the 1958 fair:

More savings bonds awards and science scholarships for youngsters getting top honors.

Enter more Chicago exhibits in the state and national finals—and make it possible for the youngsters and their teachers to go along.

Special industry awards for outstanding exhibits.

A science dinner for finalists, teachers, and judges at which a nationally known scientist would speak.

A presentation-of-awards ceremony, attended by prominent figures in the world of science. A noted scientist is also being scheduled to speak at this event, at which time winners will be announced.

General of Ohio Names New Traffic Manager

Harrod A. Bolds, general traffic supervisor of the General Telephone Co. of Indiana has been appointed general traffic manager of General Telephone

H. A. BOLDS

Co. of Ohio. The appointment was announced on Mar. 26 by Clare E. Williams, president of the General Telephone Co. of Michigan.

Mr. Bolds began his telephone career in 1929 as a switchman with the former Home Telephone & Telegraph Co., Ft. Wayne, Ind. He served in various positions with the home company, including that of assistant equipment supervisor and traffic supervisor.

He has held his present position since January 1957, shortly after the Home company was merged with General.

Invite Technical Papers For Electronics Conference

Engineers and scientists in electronics and related fields are invited to submit papers for presentation at the 14th annual National Electronics Conference to be held Oct. 13-15 at the Hotel Sherman in Chicago.

Papers must be previously unpub-

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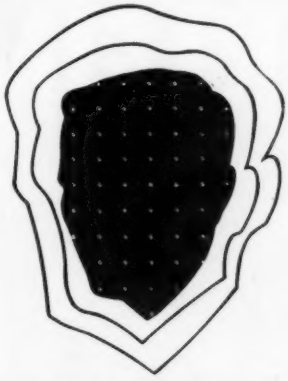

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The TTI program has been tested and perfected by telephone men. The TTI course was put into practice by communications companies to train plant engineers and installation technicians. Many new employees had had no previous electronic experience. TTI training fully qualified them to install, operate and maintain telephone equipment.

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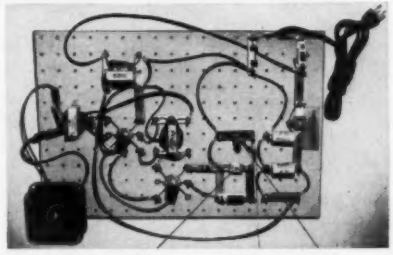
This special training kit is the key by which the student receives practical how-to-do-it experience.
TTI courses are adaptable to any company training program.



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lished and pertain to the results of research and development in one of the following or related fields:

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Also, electronic instrumentation, industrial electronics, information theory, magnetic circuit devices, medical electronics, microwaves, or radar and navigation.

Radio astronomy, radio frequency interference, semiconductor devices, servomechanisms, television, transistors, or ultrasonics.

Information regarding proposed papers including title, author's name, and an abstract (not exceeding 200 words in length), should be submitted for consideration to the program committee chairman by May 1, 1958. Completed manuscripts of accepted papers will have to be submitted by Sept. 8.

For further information contact Program Committee Chairman, Mr. L. W. Von Tersch, Electrical Engineering Department, Michigan State University, East Lansing, Mich.

T. C. Woods, President of Lincoln (Neb.) T&T, Dies

THOMAS C. WOODS, 62, president of the Lincoln (Neb.) Telephone & Telegraph Co., died on Mar. 22 after an illness of a week's duration. Mr. Woods had served as president of the company for the past 12 years.

Mr. Woods attended preparatory school at Lawrenceville, N. J., before enrolling at Yale University. His college education was interrupted by World War I during which he attended officers' training school at Fort Snelling, Minn., and served in France as a lieutenant in the field artillery. He saw action in the battles of Chemin des Dames and Belleau Wood.

Following his discharge from artillery service, he received a B.A. degree from Yale in 1918 and an LL.B. degree from Harvard in 1921. Later that year he returned to Lincoln to begin the practice of law with the newly formed firm of Woods, Woods & Aitken.

He joined Lincoln T&T at the same time as attorney.

Mr. Woods was elected vice president of the company in 1923 and became a director in 1926. In 1946, he succeeded his father, the late Frank H. Woods, as president.

During his tenure in this office, the company experienced its greatest period of growth and prosperity. One of his final acts as president was to effect the sale of an additional 5 million dollars of the company's first mortgage

T. C. WOODS

bonds, thus further enlarging the capital structure of the Lincoln company.

Mr. Woods' interests were diversified and his influence widespread in business, civic, and philanthropic fields. He was chairman of the board of the Addressograph-Multigraph Corp. of Cleveland; president of the W-K Realty Co., of Lincoln; and one of the organizers of the Continental Telephone Co. He held directorships with the Anglo-Canadian Telephone Co. of Montreal, the Securities Acceptance Corp. of Omaha, First National Bank of Lincoln, Associated Telephone Co. of Chicago, and the Woodmen Accident & Life Insurance Co. of Lincoln. He was vice president and director of the Sahara Coal Co. of Chicago.

He was also a member of the law firm of Woods, Aitken & Aitken, of Lincoln, and the American and Lancaster Bar Associations.

With his brothers, Henry C. and Frank H. Woods, of Chicago, Mr. Woods administered the Woods Charitable Fund, Inc., and at the time of his death was serving as its president. Gifts of $1,458,000 have been made from the fund since 1941.

Mr. Woods was a trustee of the University of Nebraska Foundation and a director of the Lincoln Foundation. Both organizations shared heavily in his personal contributions.

Immediate survivors include Mrs. Woods, the former Sarah Avery Ladd; a son, Thomas C. Woods Jr., of Cleveland; a daughter, Shirley Ladd Petersen, of Omaha; and five grandchildren.

See More Than Is Shown

"Men in general judge more from appearances than from reality. All men have eyes, but few have the gift of penetration."—MACCHIAVELLI.

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Higgins Named Assistant to President of Leich Sales

Fred H. Higgins, a Leich employe for 12 years, has recently been named assistant to D. C. Gibson, president of Leich Sales Corp.

F. H. HIGGINS

For the past six years Mr. Higgins has served as assistant to the district manager of the southeastern district in Leich's Chicago office. Prior to this he was Leich's warehouse manager. He started with Leich in 1946 as shipping clerk.

Kellogg Adds Gunn, Marsh To General Sales Staff

C. A. Gunn and Wade K. Marsh have joined the general sales staff of Kellogg Switchboard & Supply Co., a division of International Telephone & Telegraph Corp., in Chicago.

O. C. Bailey, general sales manager, announced that Mr. Gunn has been named sales manager for industrial products and Mr. Marsh general sales engineer.

In his new capacity, Mr. Gunn is responsible for sales of relays, apparatus, specialized switching systems, and other component parts, to industrial firms.

Mr. Marsh will direct Kellogg's field service engineers and assist the telephone companies with their maintenance of Kellogg equipment, Mr. Bailey explained.

Mr. Gunn, who attended Rice Institute and earned his electrical engineering degree from the University of Texas, brings to his new position 11 years of experience in various phases of plant, engineering and commercial departments of the operating field.

For three years—1943 to 1946—Gunn saw active duty with the Navy, serving as an officer aboard the fast carrier

C. A. GUNN

USS Franklin D. Roosevelt. He was recalled to active duty during the Korean conflict.

A native Texan, Gunn began his career with Southwestern Bell Telephone Co. He joined Southwestern States Telephone Co. in 1949 as a commercial engineer and was later promoted to general commercial superintendent.

He became active in the sales field in 1951 as a manufacturers representa-

W. K. MARSH

tive, calling on industrial, telephone, railroad, pipe line and power companies. He was serving in this capacity when he joined Kellogg.

A Navy veteran of World War II, Mr. Marsh sandwiched electrical engineering studies at Ohio State University between work in telephony. He began his career with IT&T as an installation supervisor at the Federal Telephone & Radio division in 1949.

In 1953, Marsh, a native of Columbus, O., advanced to installation foreman.

Two years later he was transferred to another IT&T division, Federal Electric Corp., and elevated to field engineer. He was later promoted to field engineering supervisor.

Marsh joined Kellogg one year ago and served as southwestern division and western division engineer before appointed to his present position.

With the IT&T divisions, Marsh has traveled extensively. Highlights in his career include helping install and test the first dialing over microwave equipment from San Juan to Poncel, Puerto Rico, and designing and testing the first multiple test set later adopted by Federal Telephone and now in use on their assembly lines.

Lenkurt Names Three To EF&I Department

Herbert K. Krengel, Lenkurt Electric Co. sales executive and applications engineer, has been named to head the telecommunications firm's engineer, furnish and install (EF&I) department staff.

As EF&I projects manager, Mr. Krengel will direct the organization

H. K. KRENGEL

which provides customers with microwave radio and carrier telephone systems from initial surveys to final turn-up and maintenance.

In his new position, Mr. Krengel succeeds William B. Farinon, who is starting his own microwave engineering firm. Mr. Farinon will continue as a consultant to Lenkurt.

Also newly-assigned to the EF&I group are Burnie L. Arnold, sales manager, and Walter G. McElfresh, senior sales engineering representative.

Mr. Krengel's 17 years in the communications field include five years with Western Electric's installation division. Joining Lenkurt in 1950 as an

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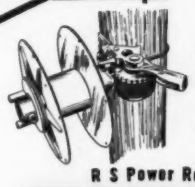
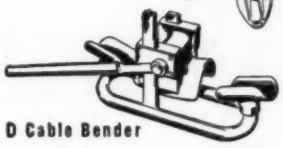

R S Power Reel

C R Power Reel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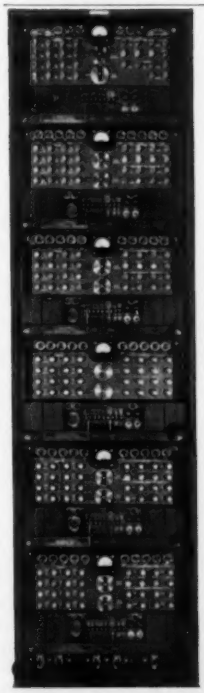

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These systems provide a voice-channel flat within 1 db from 300 to 3500 cycles, for each 4 kc of bandwidth occupied. Each channel is equipped with hybrid, signalling, and dialling circuits for all the standard 2-wire and 4-wire loop options.

The basic unit provides an order-wire and 4 carrier-derived channels. These units can be stacked in groups of 2, 3, 4 or 5 by means of a group modem to provide 9, 14, 19 or 24 channels. Full flexibility is provided for dropping and inserting channel groups at repeater and terminal points. Moderate lengths of 4-wire cable or open-wire line may be inserted between the multiplex equipment and the radio terminals.

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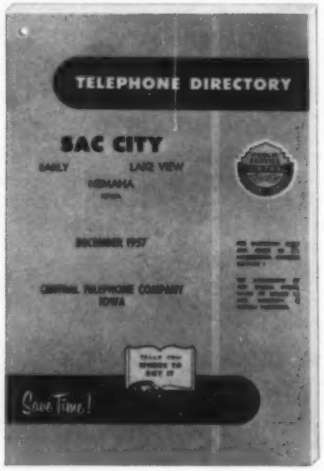

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B. L. ARNOLD

applications engineer, he later became manager of systems development and then commercial representative to the Bell System. Prior to his current assignment he was manager of direct sales to utilities.

Mr. Arnold joned Lenkurt in 1956 after five years as a carrier and radio sales division manager with Automatic Electric Sales Corp., Lenkurt's dis-

W. G. McELFRESH

tributor. His background includes four years with General Telephone Co. of California and eight years with California Interstate Telephone Co. He is a member of the American Institute of Electrical Engineers and the Independent Telephone Pioneer Association, and is a professional engineer registered in California.

Mr. McElfresh has been with Lenkurt since 1951 as applications engineer, sales engineer and commercial relations department manager. His previous experience also includes positions with Western Electric's installation division, California Interstate Telephone

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California Independent Completes Three Cut-overs

Three cut-overs made recently by the California Water & Telephone Co. were at Sylmar, Hemet and Idyllwild in California.

The Sylmar office, housed in a new, modern building, is the fifth and latest central office in the fast growing San Fernando exchange area, which is the location of the company's first SATT installation. The San Fernando exchange area is one of the largest concentrations of this equipment in the United States, encompassing slightly over 50,000 terminals. The new Sylmar central office is, therefore, an addition to the San Fernando exchange area necessitated by the rapid growth in population and was cut over with 4000 lines and 6000 terminals, complete with SATT equipment, Type A for automatic recording of customer-dialed toll calls in the Los Angeles area. Orders are now in factory for converting this regional automatic toll ticketing service to nationwide Direct Distance Dialing (DDD).

This new installation at the Sylmar office of the California Water & Telephone Co. undergoes the final inspection and tests of its SATT equipment prior to its recent cut-over. The inspectors at the monitor and test panel are (left to right): Jack Warner, Sylmar installation foreman; Joseph Scott, chief switchman, and George Rosing, installation superintendent of the San Fernando area. The four racks at left contain director equipment.

Hemet was cut over from manual to dial service with 1600 lines, 4000 terminals and a 10-position, Type 31 tollboard at the new toll center. The Idyllwild equipment was cut over to automatic at the unattended exchange with 400 lines and 800 terminals.

A E International Adds N. W. Price to Staff

Nelson W. Price has joined the staff of Automatic Electric International, Inc., at Northlake, Ill. as assistant to the export manager. He is the son of Milton M. Price, a vice president of that organization.

Young Mr. Price was born in Belgrade, Yugoslavia, raised in Belgium, and educated in Europe and the United States. He earned his Bachelor of Science Degree from Northwestern University. He furthered his studies at the Foreign Service Institute of the Department of State, Washington, D. C., and did graduate work at George Washington University.

N. W. PRICE

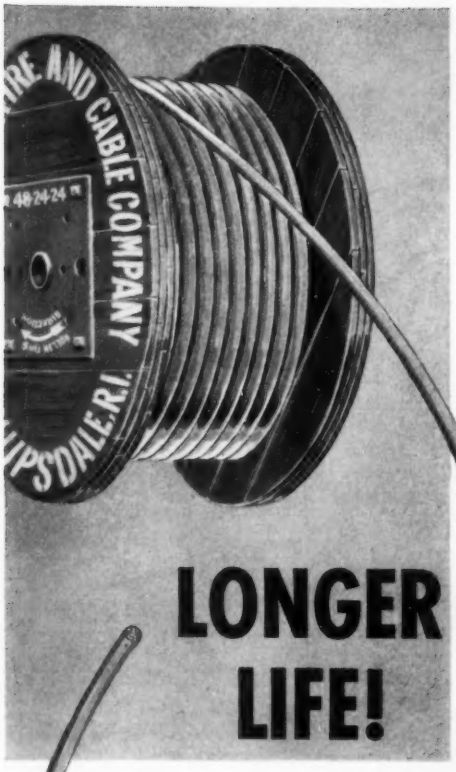
Prior to joining Automatic Electric International in 1957, Mr. Price was with the Foreign Service of the Department of State for six years during which time he was assigned, from December of 1953 to August 1956, as vice consul and assistant political officer at the U. S. Embassy in Addis Ababa, Ethiopia. He was a charter member of the Addis Ababa Rotary Club.

Androc Company Describes Pole Maintenance Service

Androc Chemical Co., Minneapolis, Minn., announced that it has developed an inspection and maintenance service for telephone companies aimed at prolonging the life-expectancy of in-service wooden poles.

The program, the Androc company says, has been designed especially for REA and private utilities to carry on regular pole inspection and treating maintenance.

Under the program, inspection teams



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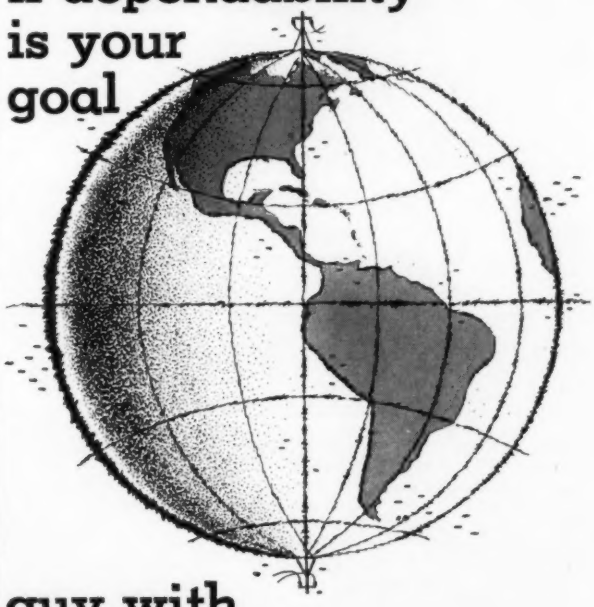

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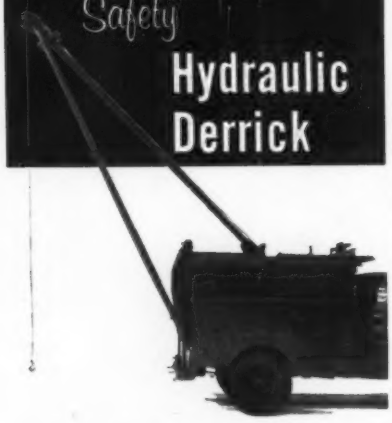

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regularly examine poles, make increment bore tests to detect internal rot and treat the poles with a new type of pentachlorophenol paste wood preservative recently developed by the company.

The firm has inaugurated the service throughout a five-state Upper Midwest area, but plans to expand it nationally through a network of franchised representatives.

Prodelin Names New General Sales Manager

The appointment of Albert Haselman to the post of general sales manager of Prodelin Inc., manufacturer of antennas and transmission line systems, was announced on Mar. 10 by Lewis A. Bondon, president.

ALBERT HASELMAN

Mr. Haselman, formerly executive vice president in charge of sales, engineering, and production for Communication Products Co., Inc., will direct marketing, distribution, warehousing, and sales development for Prodelin. He will also undertake the launching of *Spir-O-line*, the company's new semi-flexible aluminum transmission line and connectors for VHF and microwave communications.

FTL Conducts Seminar on Automatic Data Processing

Six top technical experts from Federal Telecommunication Laboratories, Nutley, N. J., research division of International Telephone & Telegraph Corp., conducted a two-day seminar on automatic data processing under the auspices of the Department of Defense, Mar. 14 and 15 at the Pentagon, Washington, D. C.

The team of scientists also included a data processing specialist from Intelex Systems, Inc., another IT&T division.

Purpose of the meeting was to acquaint Defense Department personnel with the background, present activities, and future plans of FTL and IT&T in digital data systems and data processing and transmission equipment.

Representing FTL at the technical discussions were Andre G. Clavier, vice president and technical director, general development; Armig G. Kandoian, director, Radio Communication Laboratory; Col. Houston V. Evans, USA Ret., staff assistant, defense projects; Robert W. Hughes, executive engineer; Robert L. Plouffe, executive engineer; and Dr. Hans K. Flesch, project engineer.

Intelex Systems, Inc. was represented by Eric M. S. McWhirter, vice president and technical director.

Started in 1954 by Charles A. Phillips, director of data systems research for the Department of Defense, the seminars serve to keep administrative officials abreast of the rapidly developing field of business and managerial data processing. Representing the Office of the Assistant Secretary of Defense, Comptroller, Mr. Phillips served as coordinator of the Mar. 14-15 sessions.

The background of the IT&T System in data handling and FTL's efforts in the field were the topics of introductory talks. Subsequent presentations described a large scale data processing system being prepared for installation by FTL, digital transmission systems under development for varied commercial purposes, and the work of other IT&T companies in this country and abroad in data processing research.

Albert M. Fusari has been appointed international sales representative in New York City by Automatic Electric International Inc. Mr. Fusari, prior to joining Automatic Electric in 1957, served as aide to the Commandant of the Third Naval District in New York City.

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Winter Park Hospital Installs Ericofons

The Winter Park (Fla.) Telephone Co. recently installed Ericofons in patients' private and semi-private rooms of the Winter Park Memorial Hospital.

The hospital, erected in 1955, is reported to be the first in the nation to install the new lightweight instrument developed by the North Electric Co.

The Ericofons in the patients' rooms at the Winter Park Memorial Hospital

Patient in Winter Park hospital using Ericofon.

are connected to the hospital's PBX equipment so that patients can make use of the instruments for outgoing calls on a "hotel basis." Jacks and plugs have been installed in the rooms for use with the new instruments.

The fifth largest Independent telephone company in Florida, the Winter Park Telephone Co., also reports it had a highly successful year in 1957, "the best it has had" since it began operations in 1911 as a small privately-owned company. During the past year, the company sold, within 30 days, a public offering of 40,000 shares of common stock, the first time in its history it has offered stock to the public.

The company now has in operation 13,722 telephone stations which includes a net gain of 2,355 stations added last year, for a gain of 21 per cent. Its income is now reported to be in excess of $100,000 annually, a figure it reached last year for the first time.

Last September the company converted its system to "Metropolitan Service," by installing the so-called 2-5 method of dialing and established as a new central office its new exchange building containing more than a million dollars worth of new equipment.

Metropolitan Service makes toll-free telephone service available in a 528 square mile area to all residents in the

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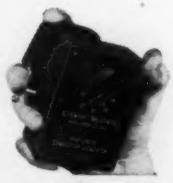

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Winter Park exchange area and gives Winter Park subscribers access to more than 70,000 telephone stations in the Winter Park and Orlando exchange areas.

Reliable Electric Names New Sales Representative

Reliable Electric Co. of Franklin Park, Ill. announces the appointment of Wallace H. Johnson to its sales staff.

Mr. Johnson was associated with General Telephone Co. of California for

W. H. JOHNSON

16 years. For the past year he has been a sales engineer for Aro Equipment Corp. of California.

Mr. Johnson will represent Reliable Electric in Texas, New Mexico, Louisiana, and southern Mississippi. His office is located at 4350 N. Central Expressway, Dallas 6, Tex.

KENTUCKY CONVENTION

Concluded from page 40

companies work toward the telephone's being regarded as a necessity.

Among reasons offered by Mr. Turner in favor of merchandising was the knowledge that those businesses which are held in the highest regard by the public are those which most aggressively merchandise their product.

Mr. Turner said that his company's concept of adequate service for the average home includes a minimum of three telephones. He mentioned the installer-repairman as the best salesman of services because of his closer contacts with customers.

Floyd I. Fairman, president of Kentucky Utilities Co., in discussing "The Changing Kentucky," said Kentucky is changing for the better, but that the state has a long way to go.

He listed several reasons why, since 1949, Kentucky has grown faster than the national average in manufacturing employment (up 17.9 per cent compared to 9.3 per cent for the nation):

(1) Kentucky is located close to the center of the nation's population and close to large markets.

(2) It has more miles of navigable streams than any other state that provides industrial water supply and transportation.

(3) The state has low cost fuel and abundant labor.

(4) Kentucky communities, for the most part, have what Mr. Fairman described as proper attitudes toward industry.

(5) Kentucky tax rates which affect industry were said by Mr. Fairman to be comparable with those of other states.

He appealed to telephone men to help make the state a better place to live and do business; also to participate in industrial development programs.

Other speakers on the program were H. J. Wright of Elizabethtown, association president, and J. A. Reitze, also of Elizabethtown, association secretary-treasurer. Hugh A. Barnhart of Rochester, Ind., vice president of the United States Independent Telephone Association, presented "A Report from National Headquarters;" and Lestern H. Means, manager, relations and utilities department, General Electric Co., spoke on "Communications—an Aid to Employe Relations."

New directors elected are: D. E. Allen of West Liberty; D. B. Corman of Glasgow, and H. J. Huether Jr. of Lexington.

Other directors are: A. L. Daughters of Cincinnati, O.; P. H. McCrory of Louisville; W. W. Thomason of Calvert City; L. T. Utz of Florence; J. F. Wibbeler of Ashland, and H. J. Wright of Elizabethtown.

The directors elected the following officers: President, Mr. Huether; vice presidents, Messrs. McCrory and Utz, and secretary-treasurer, J. A. Reitze of Elizabethtown.

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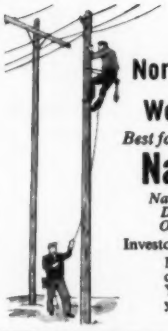

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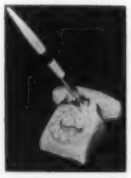

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